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Systems Engineering Product Description Report for the Hanford Cleanup Mission: First Issue

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SYSTEMS ENGINEERING PRODUCT DESCRIPTION REPORT FOR THE HANFORD CLEANUP MISSION: FIRST ISSUE

J. J. Holmes
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ABSTRACT

This document describes the upper level physical and administrative (nonphysical) products that, when delivered, complete the Hanford Cleanup Mission. Development of product descriptions is a continuation of the Sitewide Systems Engineering work described in the Sitewide functional analysis, the architecture synthesis, and is consistent with guidance contained in the mission plan. This document provides a bridge between all three documents and the products required to complete the mission of cleaning up the Hanford Site.

The product descriptions provided herein are directly derived from the functional analysis and the architectural synthesis. No attempt to integrate the products into an optimum set has been made. Optimization of the product set will require analysis of the "raw" products to (1) reveal opportunities to satisfy several functions with one product, (2) eliminate overlap, and (3) fill in gaps. Once the optimization targets are identified, the functional analysis and architectural synthesis will be revisited and updated to reflect the improvement opportunities. The whole process will need to be iterated a number of times to become internally consistent. It should be pointed out that the architectural synthesis has yet to be analyzed in detail for cost, risk, regulatory, and public acceptance issues, must be subjected to

all appropriate regulatory approval processes, and must be validated by the system customer (U.S. Department of Energy [DOE]) before adoption as the technical basis for the Hanford Cleanup Mission. Because of this the product definitions provided herein must be considered only as favored options.

This document is organized as follows:

- *Section 1 provides product definitions for each function and includes the function definition, architectural synthesis, and functional interfaces.*

- *Section 2 contains the N^2 diagrams for the functions discussed in Section 1.*

- *Section 3 contains a cross-reference between the outputs of functions contained in the Integrated Definition Language Notation (IDEF0) diagrams provided as part of the functional analysis, and the products defined in this report, indexed by IDEF0 outputs.*

- *Section 4 contains a cross-reference between products defined in this report and the outputs of functions contained in the IDEF0 diagrams, indexed by products defined in this report.*

- *Section 5 contains a listing of function names used in this report indexed by their function number.*

- *Section 6 contains an index of the products contained in this report.*

Information provided in this report emphasizes the physical outputs of the system function including Function 4, Remedy Unsafe and Unacceptable Conditions and Function 5, Transition Resources for Beneficial Use. All subsections of Function 4 are included with the exception of Function 4.6, Correct Unsafe Infrastructure Conditions. Additional work is required to integrate Function 4.6 work with the Sitewide system. This report also provides information about the nonphysical, i.e., programmatic outputs from functions (1) Manage Program, (2) Acquire Mission Essential Capabilities, and (3) Obtain Public Acceptance at Level 1.

As a result of the activity associated with the development of this report, the names of some of the outputs of functions depicted in the IDEFO diagrams, contained in the functional analysis, were decomposed to lend the required physical attributes to the function outputs and to better support the development of a product breakdown structure. A representative example of this decomposition is the conversion of the "Dispositioned Legacy" product contained in the functional analysis documentation into "Released Effluents," "Waste/Materials Dispositioned Offsite," and "Waste/Materials Dispositioned Onsite." In these cases, the decompositions will be reflected when the second issue of the functional analysis is published. The IDEFO/Product cross-reference contained in Section 3 provides traceability between the IDEFO products and the products contained in this report.

Additionally, some specific function outputs were determined to be missing from the functional analysis and have been added as products in Section 1 of this report. The Product/IDEF0 cross-reference contained in Section 4 provides traceability between the products contained in this report and the IDEF0 products.

The changes made to the products during the development of this document have been documented using the RDD-100 tool and will be updated in the next issue of the functional analysis.*

The next step in the Sitewide Systems Engineering analysis work is to organize the products into a product tree, determine areas of overlap, identify areas of omission, optimize the system, and develop detailed product specifications.

*RDD-100 is a trademark of Ascent Logic Corporation.

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LIST OF TERMS

DEF	Disposition Excess Facilities
DGE	Disposition Gaseous Effluent
DLE	Disposition Liquid Effluent
DOE	U.S. Department of Energy
DRM	Disposition Reusable Materials
DSW	Disposition Solid Waste
IDEFO	Integrated Definition Language Notation
MTW	Manage Tank Waste
RW	Retrieve Waste

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1.0 PRODUCT DESCRIPTIONS

Information within Tables 1-1 through 1-104 include the names of the function, and its definition as contained in the functional analysis, and synthesis definition for the function defined in the architecture synthesis. The "Product" column of the table lists each product generated by the function. The "Description" column contains a definition of each product and the "Source/Destination Function(s)" column indicates the source of the product (i.e. the function that produces the product) and the destination of the product (i.e., the function that receives the product). Under each product produced by the function in the "Description" column is a list of the subproducts, children, or aggregates that make up the product and, if applicable, the higher-level product, or parent, to which the product belongs or is a constituent of.

Table 1-1. Clean Up Hanford. (3 sheets)

[0] Clean Up Hanford

The waste management and environmental restoration mission is to clean up the Hanford Site, protect the health and safety of the public and our workers, protect the environment, and provide beneficial use of land and other resources while serving as the DOE model for environmental restoration. Site cleanup will be in accordance with the Hanford Federal Facility Agreement and Consent Order (also known as the Tri-Party Agreement) (Ecology et al. 1990), other agreements, and will be in compliance with all applicable federal, state, and local laws. The stakeholders will be active participants in the decision processes including establishing priorities, determining end states, and developing a consistent set of rules, regulations, and laws. The work will be leveraged with providing positive, lasting economic impact in the region. Effectiveness, efficiency, and discipline in all mission activities will enable us to achieve our vision and mission in a continuous and substantive manner.

SYNTHESIS DEFINITION

The waste management and environmental restoration mission mitigates environmental, safety, and health risks and brings the site into compliance with applicable laws and regulations. It makes Hanford land and other resources (including excess facilities and infrastructure) available for other uses by treating, storing, and disposing of wastes and other materials where necessary. It will also support the determination of appropriate future uses for Hanford's land by our varied outside stakeholder groups and does not preclude other government missions.

The mission includes the management and transition of all materials and facilities from Hanford's former defense mission. It will execute and integrate with waste management functions required to support the cleanup of the entire DOE Complex including treatment, storage, and disposal of materials received from other DOE sites.

The mission includes treatment and preparation of waste and other materials for shipment offsite. It also includes the assimilation and disposition of special nuclear materials and the disassembly and disposal of existing facilities.

The scope includes development and deployment of the infrastructure necessary to support the cleanup mission, eventual closure of waste sites, and post-closure monitoring, until responsibility for such activities is transferred to other agencies or interests.

The mission supports the economic transition of the region by mitigating adverse impacts from workforce fluctuations, through technology transfer, and by making Hanford land and other resources available for new uses.

The mission will be carried out so as to maintain public trust.

Product	*Description*	*Source/Destination Function(s)*
Institutional Information	*Institutional information provided to the regulators concerning planning, progress, and priority actions.*	from: 0, 1, 1.3 to: Regulators
Less Dependent Local Economy *aggregates:* • Enhanced Local Economy • Transitioned Economy	*Resources used during cleanup have provided secondary benefits to enhance the economic viability of the regional economy.*	from: 0 to: Local Economy

Table 1-1. Clean Up Hanford. (3 sheets)

Public Acceptance	*Public trust and acceptance is obtained.* *A prerequisite for successful completion of the cleanup mission is obtaining public trust. This trust is essential to gaining the broad public acceptance needed to close the site. Embedded in this end state is the information supplied to the public on progress, planning, and unusual events during mission implementation.*	from: 0, 3, 3.3 to: Stakeholders
Public Information *aggregates:* • Non-Issue Information	*Public information to entities outside the mission consisting of press releases, position papers, educational matter, policy, strategy, etc.*	from: 0, 3 to: Stakeholders
Released Effluents *aggregates:* • Released Gaseous Effluents • Released Liquid Effluents	*Fluids and gases resulting from Hanford Cleanup operations that are released to the environment or site aquifer.*	from: 0 to: Environment
Resources Transferred	*Land and other resources transferred for external socially beneficial uses.* *Land and other resources recovered and returned for beneficial uses by the Hanford Cleanup Program (e.g., caretaker, dual use infrastructure, and other Hanford Site missions).*	from: 0, 5, 5.2, 5.3 to: Stakeholders
Waste/Materials Dispositioned Off-Site *aggregates:* • Dispositioned Solid Waste (TWRS) • Hazardous Waste • Immobilized HLW • Immobilized TRU Waste • OverPacked Capsules • Processed Post-70 TRU/TRUM • SNM/NM/NF Dispositioned Off Site • Sanitary Sewage	*High level, hazardous, and TRU waste or SNM/NM/NF transferred to external entities for disposal or disposition.*	from: 0, 4 to: Offsite Disposal Site

Table 1-1. Clean Up Hanford. (3 sheets)

Waste/Materials Dispositioned On-Site *aggregates:* • Closed ILLW Sites • Closed Waste Disposal Facility • Dispositioned Solid Waste (TWRS) • LLMW/LLW • Landfill Wastes • RCRA Covered Trench • Sanitary Landfill Waste	*Low level waste disposed on the 200 area plateau.*	from: 0, 4 to: On-Site Disposal System

Table 1-2. Manage Program. (2 sheets)

[1] Manage Program

The MANAGE PROGRAM function provides all program planning, management direction, evaluation, and the management system. This function does not directly contribute to the final state but provides the management needed to conduct the mission. The function includes specification of management policies and procedures, systems engineering, program definition, configuration management, scheduling, allocation of all resources, definition of performance criteria, and resolution of regulatory problems.

SYNTHESIS DEFINITION

Use systems engineering to redesign the management system for Hanford cleanup.

Product	*Description*	*Source/Destination Function(s)*
Allocated Resources	*Financial resources authorized to the implementing organization for completion of the function*	from: 1, 1.4 to: 2, 3, 3.1, 4, 4.1, 4.1.1, 4.1.1.1, 4.1.1.2, 4.1.1.3, 4.1.1.4, 4.1.2, 4.1.2.1, 4.1.2.2, 4.1.2.3, 4.1.3, 4.1.3.1, 4.1.3.2, 4.1.3.3, 4.1.4, 4.1.4.1, 4.1.4.2, 4.1.4.3, 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.3, 4.3.3.4, 4.3.4, 4.3.4.1, 4.3.4.2, 4.3.4.3, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4, 4.3.5.5, 4.3.5.6, 4.3.5.7, 4.3.5.8, 4.4, 4.5, 4.5.1, 4.5.2, 4.5.3, 4.5.4, 4.5.5, 4.6, 4.7, 4.7.1, 4.7.2, 4.7.3, 4.7.4, 4.7.5, 5, 5.1, 5.2, 5.3
Cleanup Program Information	*Cleanup Program Information consisting of program plans for review, comment and information, progress information, and resource allocation information to the OBTAIN PUBLIC TRUST function for public review and information.*	from: 1, 1.4, 1.5 to: 3, 3.1
Defined Work Package	*Documentation describing the specific work; work authorization, description, procedures, resource limits and schedules; controlling performance of the function*	from: 1, 1.4 to: 1.5, 2, 3, 3.1, 3.2, 3.3, 3.4, 4, 4.1, 4.1.1, 4.1.1.2, 4.1.1.3, 4.1.1.4, 4.1.2, 4.1.2.2, 4.1.2.3, 4.1.3, 4.1.3.2, 4.1.3.3, 4.1.4, 4.1.4.2, 4.1.4.3, 4.3, 4.3.1, 4.3.1.1, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.3, 4.3.3.4, 4.3.4, 4.3.4.1, 4.3.4.2, 4.3.4.3, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4, 4.3.5.5, 4.3.5.6, 4.3.5.7, 4.3.5.8, 4.4, 4.5, 4.5.1, 4.5.2, 4.5.3, 4.5.4, 4.5.5, 4.6, 4.7, 4.7.1, 4.7.2, 4.7.3, 4.7.4, 4.7.5, 5, 5.1, 5.2, 5.3

Table 1-2. Manage Program. (2 sheets)

Direction & Control	*Management guidance based on the status of implementation of the Defined Work Packages*	from: 1, 1.4 to: 2, 3, 3.1, 3.2, 3.3, 3.4, 4, 4.1, 4.1.1, 4.1.1.1, 4.1.1.2, 4.1.1.3, 4.1.1.4, 4.1.2, 4.1.2.1, 4.1.2.2, 4.1.2.3, 4.1.3, 4.1.3.1, 4.1.3.2, 4.1.3.3, 4.1.4, 4.1.4.1, 4.1.4.2, 4.1.4.3, 4.3, 4.3.1, 4.3.1.1, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.3, 4.3.3.4, 4.3.4, 4.3.4.1, 4.3.4.2, 4.3.4.3, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4, 4.3.5.5, 4.3.5.6, 4.3.5.7, 4.3.5.8, 4.4, 4.5, 4.5.1, 4.5.2, 4.5.3, 4.5.4, 4.5.5, 4.6, 4.7, 4.7.1, 4.7.2, 4.7.3, 4.7.4, 4.7.5, 5, 5.1, 5.2, 5.3
Institutional Information	*Institutional information provided to the regulators concerning planning, progress, and priority actions.*	from: 0, 1, 1.3 to: Regulators
Mission Requirements	*Externally- and internally-imposed product specifications and process constraints derived from all applicable laws, directives, policies, standards, agreements with stakeholders, engineering studies, safety analyses, and findings from surveillances and audits.*	from: 1, 1.3 to: 1.1, 1.4, 1.5, 2, 3, 3.1, 3.2, 3.3, 3.4, 4, 4.1, 4.1.1, 4.1.1.1, 4.1.1.2, 4.1.1.3, 4.1.1.4, 4.1.2, 4.1.2.1, 4.1.2.2, 4.1.2.3, 4.1.3, 4.1.3.1, 4.1.3.2, 4.1.3.3, 4.1.4, 4.1.4.1, 4.1.4.2, 4.1.4.3, 4.3, 4.3.1, 4.3.1.1, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.3, 4.3.3.4, 4.3.4, 4.3.4.1, 4.3.4.2, 4.3.4.3, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4, 4.3.5.5, 4.3.5.6, 4.3.5.7, 4.3.5.8, 4.4, 4.5, 4.5.1, 4.5.2, 4.5.3, 4.5.4, 4.5.5, 4.6, 4.7, 4.7.1, 4.7.2, 4.7.3, 4.7.4, 4.7.5, 5, 5.1, 5.2, 5.3

[1.1] Establish Management System

The ESTABLISH MANAGEMENT SYSTEM (1.1) function defines the procedures, policies, reporting, configuration management, etc., needed to manage the program. This function encompasses all routine management areas such as total quality, quality assurance, personnel management, legal services, fiscal control, prime contracts, etc. This function also develops the organizational structure, evaluates the efficiency of management work, and develops appropriate corrective actions.

SYNTHESIS DEFINITION

The management system will include a top level mission-wide element and a lower tier performer specific system. The elements of both will be selected from management processes of successful government and private organizations.

Product	*Description*	*Source/Destination Function(s)*
Effective Management System	*The management organization, infrastructure, principles and policies established to formulate and execute the programs required to complete the Hanford cleanup mission successfully.*	from: 1.1 to: 1.2, 1.3, 1.4, 1.5

Table 1-3. Establish Management System.

Table 1-4. Perform Systems Engineering.

[1.2] Perform Systems Engineering The PERFORM SYSTEMS ENGINEERING (1.2) function performs SE activities for the mission.		
SYNTHESIS DEFINITION Develop a Hanford unique Systems Engineering approach using a combination of resident and outside experts, perfect the method through use, and strengthen resident capability by adding professional S.E. staff.		
Product	***Description***	***Source/Destination Function(s)***
System Architecture	*System design (architecture) is the set of activities which selects the solution concept and formulates a system description suitable for implementing and/or procuring a system (that will achieve the Hanford cleanup mission).*	from: 1.2 to: 1.3
System Functional Definition	*An identification of the functions that must be performed to achieve the Hanford cleanup mission.*	from: 1.2 to: 1.3
System Requirements	*An identification of the set of activities neceassary to determine how well a function must be performed and under what conditions it must be performed.*	from: 1.2 to: 1.3

Table 1-5. Formulate Program.

[1.3] Formulate Program The FORMULATE PROGRAM (1.3) function converts the SE product tree into an executable set of programs consisting of schedules, budgets and priorities and produces all program descriptive information.		
SYNTHESIS DEFINITION (Products identified from higher level functions. Architecture not yet defined.)		
Product	***Description***	***Source/Destination Function(s)***
Institutional Information	*Institutional information provided to the regulators concerning planning, progress, and priority actions.*	from: 0, 1, 1.3 to: Regulators
Mission Requirements	*Externally- and internally-imposed product specifications and process constraints derived from all applicable laws, directives, policies, standards, agreements with stakeholders, engineering studies, safety analyses, and findings from surveillances and audits.*	from: 1, 1.3 to: 1.1, 1.4, 1.5, 2, 3, 3.1, 3.2, 3.3, 3.4, 4, 4.1, 4.1.1, 4.1.1.1, 4.1.1.2, 4.1.1.3, 4.1.1.4, 4.1.2, 4.1.2.1, 4.1.2.2, 4.1.2.3, 4.1.3, 4.1.3.1, 4.1.3.2, 4.1.3.3, 4.1.4, 4.1.4.1, 4.1.4.2, 4.1.4.3, 4.3, 4.3.1, 4.3.1.1, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.3, 4.3.3.4, 4.3.4, 4.3.4.1, 4.3.4.2, 4.3.4.3, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4, 4.3.5.5, 4.3.5.6, 4.3.5.7, 4.3.5.8, 4.4, 4.5, 4.5.1, 4.5.2, 4.5.3, 4.5.4, 4.5.5, 4.6, 4.7, 4.7.1, 4.7.2, 4.7.3, 4.7.4, 4.7.5, 5, 5.1, 5.2, 5.3

Table 1-6. Direct Program. (2 sheets)

[1.4] Direct Program

The DIRECT PROGRAM (1.4) function assigns the work activities defined above to the performing entity along with budget, work definition and other necessary resources.

SYNTHESIS DEFINITION

(Products identified from higher level functions. Architecture not yet defined.)

Product	*Description*	*Source/Destination Function(s)*
Allocated Resources	*Financial resources authorized to the implementing organization for completion of the function*	from: 1, 1.4 to: 2, 3, 3.1, 4, 4.1, 4.1.1, 4.1.1.1, 4.1.1.2, 4.1.1.3, 4.1.1.4, 4.1.2, 4.1.2.1, 4.1.2.2, 4.1.2.3, 4.1.3, 4.1.3.1, 4.1.3.2, 4.1.3.3, 4.1.4, 4.1.4.1, 4.1.4.2, 4.1.4.3, 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.3, 4.3.3.4, 4.3.4, 4.3.4.1, 4.3.4.2, 4.3.4.3, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4, 4.3.5.5, 4.3.5.6, 4.3.5.7, 4.3.5.8, 4.4, 4.5, 4.5.1, 4.5.2, 4.5.3, 4.5.4, 4.5.5, 4.6, 4.7, 4.7.1, 4.7.2, 4.7.3, 4.7.4, 4.7.5, 5, 5.1, 5.2, 5.3
Cleanup Program Information	*Cleanup Program Information consisting of program plans for review, comment and information, progress information, and resource allocation information to the OBTAIN PUBLIC TRUST function for public review and information.*	from: 1, 1.4, 1.5 to: 3, 3.1
Defined Work Package	*Documentation describing the specific work; work authorization, description, procedures, resource limits and schedules; controlling performance of the function*	from: 1, 1.4 to: 1.5, 2, 3, 3.1, 3.2, 3.3, 3.4, 4, 4.1, 4.1.1, 4.1.1.2, 4.1.1.3, 4.1.1.4, 4.1.2, 4.1.2.2, 4.1.2.3, 4.1.3, 4.1.3.2, 4.1.3.3, 4.1.4, 4.1.4.2, 4.1.4.3, 4.3, 4.3.1, 4.3.1.1, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.3, 4.3.3.4, 4.3.4, 4.3.4.1, 4.3.4.2, 4.3.4.3, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4, 4.3.5.5, 4.3.5.6, 4.3.5.7, 4.3.5.8, 4.4, 4.5, 4.5.1, 4.5.2, 4.5.3, 4.5.4, 4.5.5, 4.6, 4.7, 4.7.1, 4.7.2, 4.7.3, 4.7.4, 4.7.5, 5, 5.1, 5.2, 5.3

Table 1-6. Direct Program. (2 sheets)

Direction & Control	*Management guidance based on the status of implementation of the Defined Work Packages*	from: 1, 1.4 to: 2, 3, 3.1, 3.2, 3.3, 3.4, 4, 4.1, 4.1.1, 4.1.1.1, 4.1.1.2, 4.1.1.3, 4.1.1.4, 4.1.2, 4.1.2.1, 4.1.2.2, 4.1.2.3, 4.1.3, 4.1.3.1, 4.1.3.2, 4.1.3.3, 4.1.4, 4.1.4.1, 4.1.4.2, 4.1.4.3, 4.3, 4.3.1, 4.3.1.1, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.3, 4.3.3.4, 4.3.4, 4.3.4.1, 4.3.4.2, 4.3.4.3, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4, 4.3.5.5, 4.3.5.6, 4.3.5.7, 4.3.5.8, 4.4, 4.5, 4.5.1, 4.5.2, 4.5.3, 4.5.4, 4.5.5, 4.6, 4.7, 4.7.1, 4.7.2, 4.7.3, 4.7.4, 4.7.5, 5, 5.1, 5.2, 5.3

Table 1-7. Evaluate Program.

[1.5] Evaluate Program The EVALUATE PROGRAM (1.5) function evaluates progress, quality, and efficiency of assigned work activities, reports to appropriate authority, and recommends corrective action.		
SYNTHESIS DEFINITION (Products identified from higher level functions. Architecture not yet defined.)		
Product	***Description***	***Source/Destination Function(s)***
Cleanup Program Information	*Cleanup Program Information consisting of program plans for review, comment and information, progress information, and resource allocation information to the OBTAIN PUBLIC TRUST function for public review and information.*	from: 1, 1.4, 1.5 to: 3, 3.1

Table 1-8. ENSURE REGULATORY COMPLIANCE.

[1.6] ENSURE REGULATORY COMPLIANCE

Mission:
Ensure that the program meets all regulatory requirements. Identify the regulations that apply to the program and physical system. Develop criteria and strategies for compliance, obtain licenses, permits and approvals to cleanup the Hanford site, including constructing, operating, and decommissioning Hanford site cleanup facilities, and decommissioning and disposing of Hanford legacy facilities. Determine acceptability of compliance activities with applicable regulations. Coordinate preparation of all regulatory submittals. Act as the single point program interface for regulatory compliance activities.
Scope:
The regulatory compliance function addresses all legal, regulatory, and administrative requirements [such as U.S. Department of Energy (DOE) orders] that derive from sources outside the DOE-RL office, which DOE-RL adopts as mandatory for execution in the program or incorporation into the Hanford cleanup program. This function is executed throughout the life of the program. Regulators' compliance is met and verified within the design documents, during construction, operation, closure, decommissioning, and disposal of waste. Three key functions produce products in the initial stages of the program. The functions are as follows: (1) applicable regulatory requirements are identified by applying program applicability screenings; (2) compliance criteria and approaches are established consistent with program strategy; and (3) regulatory submittals are prepared that use information products provided by design, waste characterization, and other functions to obtain compliance. The regulatory compliance function ensures that the regulatory requirements and acceptance criteria are interpreted in accordance with the intent of the regulatory agency, such as the Environmental Protection Agency. It does not determine the technical adequacy of the information submitted to the regulatory agency with respect to meeting regulatory requirements. However, it does advise the responsible technical functions of the agency's expectations about adequacy of information for licensing or permits. Once the technical information is submitted to the agency, the regulatory compliance function maintains an advocacy position with the regulators on behalf of the program. The regulatory compliance function does not audit or monitor the performance or product of other functions to ensure compliance. This is performed as an integral part of the performing functions.
Requirements:
The function is initiated by identification of the mission, mission requirements, or physical system requirements that may come under the jurisdiction of an authorized governmental agency. It is terminated with issuance of and demonstrated compliance with the governing permit license or regulatory authorization.

SYNTHESIS DEFINITION

(Products identified from higher level functions. Architecture not yet defined.)

Product	*Description*	*Source/Destination Function(s)*

Table 1-9. Acquire Mission Essential Capabilities.

[2] Acquire Mission Essential Capabilities

The ACQUIRE MISSION ESSENTIAL CAPABILITIES function provides all new intellectual and physical resources. This includes personnel, consultants, services, supplies, equipment, construction projects, and subcontracts of all kinds.

SYNTHESIS DEFINITION

The acquisition system will emphasize use of high performing off-site resources to perform specific tasks where cost, schedule, or quality advantages are evident. The acquisition system will be upgraded by continuous improvement using TQM and value engineering. Parametric modeling of the acquisition system will be conducted to provide the basis to re-engineer the process.

Product	*Description*	*Source/Destination Function(s)*
Enhanced Local Economy *is a constituent of:* • Less Dependent Local Economy	*Cleanup resources that have been expended in a manner to support independence of the local/private sector economy. This can be achieved through development of public/private sector partnerships, transfer of technologies for use elsewhere, etc. Also, expenditure of these resources should, where possible, provide national and international benefit by making technology and expertise broadly available.*	from: 2 to: (Local Economy)
Mission Essential Capabilities *aggregates:* • Mission Essential Expertise • Mission Essential Facilities, Equipment, Infrastructure, & Supplies • Mission Essential Information • Mission Essential Integrated Independent Services • Mission Essential Technology	*Mission essential capabilities in the form of all physical resources, manpower, technology, infrastructure, expertise required by all the other functions to conduct their submissions.*	from: 2 to: 3, 3.1, 4, 4.1, 4.1.1, 4.1.1.1, 4.1.1.2, 4.1.1.3, 4.1.1.4, 4.1.2, 4.1.2.1, 4.1.2.2, 4.1.2.3, 4.1.3, 4.1.3.1, 4.1.3.2, 4.1.3.3, 4.1.4, 4.1.4.1, 4.1.4.2, 4.1.4.3, 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.3, 4.3.3.4, 4.3.4, 4.3.4.1, 4.3.4.2, 4.3.4.3, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4, 4.3.5.5, 4.3.5.6, 4.3.5.7, 4.3.5.8, 4.4, 4.5, 4.5.1, 4.5.2, 4.5.3, 4.5.4, 4.5.5, 4.6, 4.7, 4.7.1, 4.7.2, 4.7.3, 4.7.4, 4.7.5, 5, 5.1, 5.2, 5.3
Transferrable Technology	*Technologies that are transferrable for uses outside of the Hanford clean-up mission after modifications/upgrades are completed to make the technology useable outside of the Hanford clean-up mission.*	from: 2 to: 5, 5.1, 5.2, 5.3

Table 1-10. Obtain Public Acceptance.

[3] Obtain Public Acceptance

The OBTAIN PUBLIC ACCEPTANCE function provides all the public interactions needed to complete the mission, such as public review of all plans, clarification of public values, and determining of public values needed to minimize conflicts between the stakeholder interests and mission activities.

SYNTHESIS DEFINITION

Provide for public participation in the planning and decision processes, maintain an issues oriented flexible approach for public involvement, and maintain a continuous flow of information to and from the public without "spin" management.

Product	*Description*	*Source/Destination Function(s)*
Public Acceptance	*Public trust and acceptance is obtained.* *A prerequisite for successful completion of the cleanup mission is obtaining public trust. This trust is essential to gaining the broad public acceptance needed to close the site. Embedded in this end state is the information supplied to the public on progress, planning, and unusual events during mission implementation.*	from: 0, 3, 3.3 to: Stakeholders
Public Information *aggregates:* • Non-Issue Information	*Public information to entities outside the mission consisting of press releases, position papers, educational matter, policy, strategy, etc.*	from: 0, 3 to: Stakeholders
Public Needs/Information	*In the course of acquiring public trust and acceptance, needs and information may be discovered which may impact direction & control, mission requirements, and defined work packages. This information must be fed back to the MANAGE PROGRAM function for evaluation.*	from: 3, 3.4 to: (1), (1.1), (1.3), (1.5)
Public Values	*Public values to the program planning process from the OBTAIN PUBLIC ACCEPTANCE function.*	from: 3, 3.3 to: 1, 1.1, 1.3, 1.5

Table 1-11. Identify Issues.

[3.1] Identify Issues The IDENTIFY ACTIVITIES MOST MEANINGFUL TO PUBLIC INVOLVEMENT (3.1) function defines areas of high interest to the various public sectors (sometimes called publics).		
SYNTHESIS DEFINITION Analyze broad information resources and seek feedback on key decisions selected by the public from dissemination of key decision inventory data.		
Product	***Description***	***Source/Destination Function(s)***
ID Key Issues For PI	*Specific issues pertaining to Hanford cleanup identified as significant concerns to the public.*	from: 3.1 to: 3.2
Non-Issue Information *is a constituent of:* • Public Information	*Information released to the public for general knowledge.*	from: 3.1 to: (Stakeholders)

Table 1-12. Identify Information Needs For Public Groups.

[3.2] Identify Information Needs For Public Groups The IDENTIFY NEEDS (3.2) function defines areas where the cleanup mission needs public involvement.		
SYNTHESIS DEFINITION Use the Creighton and Creighton approach to develop public involvement plans, evaluate public needs by information gathering and self-expressed interest in the Cleanup key decision inventory list(function 3.1)		
Product	***Description***	***Source/Destination Function(s)***
Public Group Specific PI Plan	*The public involvement plan for identifying and developing or obtaining information necessary to alleviate public concerns, for providing the information to the public, and reconciling differences between the public and site needs and expectations.*	from: 3.2 to: 3.3

Table 1-13. Develop Understanding Of Public/Mission Differences.

[3.3] Develop Understanding Of Public/Mission Differences The IDENTIFY PUBLICS (3.3) function classifies the public into associated groups with common outlooks and needs.		
SYNTHESIS DEFINITION (Products identified from higher level functions. Architecture not yet defined.)		
Product	***Description***	***Source/Destination Function(s)***
Public Acceptance	*Public trust and acceptance is obtained.* *A prerequisite for successful completion of the cleanup mission is obtaining public trust. This trust is essential to gaining the broad public acceptance needed to close the site. Embedded in this end state is the information supplied to the public on progress, planning, and unusual events during mission implementation.*	from: 0, 3, 3.3 to: Stakeholders
Public Values	*Public values to the program planning process from the OBTAIN PUBLIC ACCEPTANCE function.*	from: 3, 3.3 to: 1, 1.1, 1.3, 1.5

Table 1-14. Reconcile Differences.

[3.4] Reconcile Differences The ELIMINATE ADVERSARIAL RELATIONSHIPS (3.4) function conducts those activities requiring public input and fills the need for public interaction with respect to public expectations, needs and information.		
SYNTHESIS DEFINITION (Products identified from higher level functions. Architecture not yet defined.)		
Product	***Description***	***Source/Destination Function(s)***
Public Needs/Information	*In the course of acquiring public trust and acceptance, needs and information may be discovered which may impact direction & control, mission requirements, and defined work packages. This information must be fed back to the MANAGE PROGRAM function for evaluation.*	from: 3, 3.4 to: (1), (1.1), (1.3), (1.5)

Table 1-15. Remedy Unsafe And Unacceptable Conditions. (2 sheets)

[4] Remedy Unsafe And Unacceptable Conditions

The REMEDY UNSAFE AND UNACCEPTABLE CONDITIONS function provides the physical changes needed to complete the function and provides the safe and efficient operation of all facilities. Included within this function are environmental restoration of buildings, facilities, groundwater, and soils, treatment of waste materials, interim storage of various materials, disposition of low-level waste, packaging and shipment of hazardous, transuranic, mixed, and high-level waste, retrieval of wastes for disposition, regulatory compliance actions, and disposition of new imported wastes and materials.

SYNTHESIS DEFINITION

The Hanford Cleanup System will: utilize the 200 Area plateau for compliant disposal of LLW, Mixed waste, and unregulated materials; cleanup to "end use" requirements elsewhere, release compliant gaseous and aqueous streams to the environment, export wastes/materials which must be dispositioned off-site (HLW, TRU, etc.); interim store packaged wastes/materials which must be disposed off-site but cannot be shipped during mission life; Utilize existing facilities for mission activities where appropriate; acquire new facilities/infrastructure as needed.

Product	*Description*	*Source/Destination Function(s)*
Infrastructure Support	*Basic, commonly used goods and services provided to multiple functions to sustain their operations.*	from: 4, 4.6 to: 1, 2, 3, 4.1, 4.2, 4.3, 4.4, 4.5, 4.7, 5
Released Gaseous Effluents *is a constituent of:* • Released Effluents *aggregates:* • Dispositioned Gaseous Effluent	*Gaseous effluents resulting from Hanford Cleanup operations that are released to the atmosphere.*	from: 4 to: (Environment)
Released Liquid Effluents *is a constituent of:* • Released Effluents *aggregates:* • Releasable Liquid from Aqueous Waste • Released Liquid Effluents from R&R	*Liquid effluents resulting from Hanford Cleanup operations that are released into the environment.*	from: 4 to: (Environment)
Transferrable Resources *aggregates:* • Transferrable Resources from Aqueous Waste • Transferrable Resources from Deactivation • Transferrable Resources from Infrastructure • Transferrable Resources from Remedy/Restore • Transferrable Resources from SNM/NM/NF Cleanup • Transferrable Resources from Solid Waste • Transferrable Resources from Tank Waste Remediation	*Any item having a new owner identified.*	from: 4 to: 5, 5.1, 5.2, 5.3

Table 1-15. Remedy Unsafe And Unacceptable Conditions. (2 sheets)

Waste/Materials Dispositioned Off-Site *aggregates:* • Dispositioned Solid Waste (TWRS) • Hazardous Waste • Immobilized HLW • Immobilized TRU Waste • OverPacked Capsules • Processed Post-70 TRU/TRUM • SNM/NM/NF Dispositioned Off Site • Sanitary Sewage	*High level, hazardous, and TRU waste or SNM/NM/NF transferred to external entities for disposal or disposition.*	from: 0, 4 to: Offsite Disposal Site
Waste/Materials Dispositioned On-Site *aggregates:* • Closed ILLW Sites • Closed Waste Disposal Facility • Dispositioned Solid Waste (TWRS) • LLMW/LLW • Landfill Wastes • RCRA Covered Trench • Sanitary Landfill Waste	*Low level waste disposed on the 200 area plateau.*	from: 0, 4 to: On-Site Disposal System

Table 1-16. Deactivate Facilities.

[4.1] Deactivate Facilities

The DEACTIVATE FACILITIES (4.1) function contains the safe operation of all facilities until further operation is no longer mission essential. The primary output is eventual facility conversion to a state where transfer to the function 4.4 or 5.0 can take place.

SYNTHESIS DEFINITION

Facilities having no confirmed future use will be rapidly deactivated to the point where a stable configuration exists which poses a low risk to follow-on demolition work activities. Deactivated facilities will be allowed to degrade in a manageable way until final disposition occurs. "High risk" equipment and materials will be transfered to qualified waste storage.

Product	*Description*	*Source/Destination Function(s)*
Aqueous Waste from Deactivation *aggregates:* • Aqueous Waste from Deactivation (Type 1) • Aqueous Waste from Deactivation (Type 2) • Aqueous Waste from Deactivation (Type 3)	*Waste water containing TRU, radioactive or hazardous materials resulting from deactivation of facilities.*	from: 4.1 to: 4.5, 4.5.3
Deactivated Facilities *aggregates:* • Deactivated Type 3 Facility • Deactivated Type 4 Facility	*Facilities placed in an acceptable condition for demolition or as a transferrable resource.*	from: 4.1 to: 4.4, 4.4.3
SNM/NM/NF Recovered from Deactivation	*SNM/NM/NF removed from a facility in order to place it in a deactivated state.*	from: 4.1, 4.1.1, 4.1.1.4 to: 4.7, 4.7.3
Solid Waste from Deactivation *aggregates:* • Solid Waste from Deactivation (Type 1) • Solid Waste from Deactivation (Type 2) • Solid Waste from Deactivation (Type 3)	*Solid waste materials contaminated with radioactive or hazardous materials resulting from deactivating the facility and from maintaining the facility prior to deactivation and until demolition or transfer.*	from: 4.1 to: 4.3, 4.3.2, 4.3.2.2
Tank Waste from Deactivation *aggregates:* • Tank Waste from Deactivation (Type 1) • Tank Waste from Deactivation (Type 2)	*Tank waste materials resulting from deactivation of facilities containing a high level of hazardous or mixed waste.*	from: 4.1 to: 4.2, 4.2.1, 4.2.1.4
Transferrable Resources from Deactivation *is a constituent of:* • Transferrable Resources	*Equipment, components, or materials from deactivation cleaned up to acceptable levels and having a new owner identified.*	from: 4.1, 4.1.1, 4.1.1.4, 4.1.2, 4.1.2.3, 4.1.3, 4.1.3.3, 4.1.4 , 4.1.4.3 to: (5), (5.1), (5.2), (5.3)

Table 1-17. Deactivate Facilities With Special Nuclear Materials & Nuclear Materials (Type 1 Fcity).

[4.1.1] Deactivate Facilities With Special Nuclear Materials & Nuclear Materials (Type 1 Fcity)

Deactivates facilities containing the following materials: special nuclear materials, nuclear materials, nuclear fuels and may include radioactive or hazardous materials (e.g. Purex, PFP).

SYNTHESIS DEFINITION

Identify and stabilize hazardous and radioactive materials, remove radioactive materials which pose a threat to ER work, Remove SNM/NM/NF, terminate utilities and facilities interties, provide secure reentry access, abandon facilities except for surveillance and minimize maintenance prior to demolition activities.

Product	*Description*	*Source/Destination Function(s)*
Aqueous Waste from Deactivation (Type 1) *is a constituent of:* • Aqueous Waste from Deactivation	*Waste water containing TRU, radioactive or hazardous materials resulting from deactivation of type 1 facilities.*	from: 4.1.1, 4.1.1.1 to: (4.5), (4.5.3)
SNM/NM/NF Recovered from Deactivation	*SNM/NM/NF removed from a facility in order to place it in a deactivated state.*	from: 4.1, 4.1.1, 4.1.1.4 to: 4.7, 4.7.3
Solid Waste from Deactivation (Type 1) *is a constituent of:* • Solid Waste from Deactivation	*Solid waste materials contaminated with radioactive or hazardous materials resulting from deactivating the type 1 facility and from maintaining the facility prior to deactivation and until demolition or transfer.*	from: 4.1.1, 4.1.1.1 to: (4.3), (4.3.2), (4.3.2.2)
Stabilized Type 2 Facility	*Type 2 facility with stabilized radioactive materials.*	from: 4.1.1, 4.1.1.4 to: 4.1.2, 4.1.2.1
Tank Waste from Deactivation (Type 1) *is a constituent of:* • Tank Waste from Deactivation	*Tank waste materials resulting from deactivation of type 1 facilities containing a high level of hazardous or mixed waste.*	from: 4.1.1, 4.1.1.1 to: (4.2), (4.2.1), (4.2.1.4)
Transferrable Resources from Deactivation *is a constituent of:* • Transferrable Resources	*Equipment, components, or materials from deactivation cleaned up to acceptable levels and having a new owner identified.*	from: 4.1, 4.1.1, 4.1.1.4, 4.1.2, 4.1.2.3, 4.1.3, 4.1.3.3, 4.1.4 , 4.1.4.3 to: (5), (5.1), (5.2), (5.3)

Table 1-18. Maintain Safety & Compliance Envelope (Type 1 Fcity).

[4.1.1.1] Maintain Safety & Compliance Envelope (Type 1 Fcity)

Maintains the facility structure, qualified staff, safe and compliant equipment, documentation and provides assessment of safety and compliance states. Provides all necessary resources for safe and compliant operation in accordance with governing safety codes and regulations.

SYNTHESIS DEFINITION

Only those systems and portions of a facility involved with the size of the active safety and compliance envelope are maintained and operated. All aspects of the safety envelope need to be fine tuned during the deactivation process to reflect the continual reduction in the safety envelop taking place. All facility reconfigurations are performed under OSHA construction requirements.

Product	*Description*	*Source/Destination Function(s)*
Aqueous Waste from Deactivation (Type 1) *is a constituent of:* • Aqueous Waste from Deactivation	*Waste water containing TRU, radioactive or hazardous materials resulting from deactivation of type 1 facilities.*	from: 4.1.1, 4.1.1.1 to: (4.5), (4.5.3)
Safe and Compliant Resources (Type 1)	*All necessary resources for safe and compliant operation of type 1 facilities in accordance with governing safety codes and regulations.*	from: 4.1.1.1 to: 4.1.1.2, 4.1.1.3, 4.1.1.4
Solid Waste from Deactivation (Type 1) *is a constituent of:* • Solid Waste from Deactivation	*Solid waste materials contaminated with radioactive or hazardous materials resulting from deactivating the type 1 facility and from maintaining the facility prior to deactivation and until demolition or transfer.*	from: 4.1.1, 4.1.1.1 to: (4.3), (4.3.2), (4.3.2.2)
Tank Waste from Deactivation (Type 1) *is a constituent of:* • Tank Waste from Deactivation	*Tank waste materials resulting from deactivation of type 1 facilities containing a high level of hazardous or mixed waste.*	from: 4.1.1, 4.1.1.1 to: (4.2), (4.2.1), (4.2.1.4)

Table 1-19. Determine Deactivation Plans & Negotiate Turnover Endpoint (Type 1 Fcity).

[4.1.1.2] Determine Deactivation Plans & Negotiate Turnover Endpoint (Type 1 Fcity)		
Assess the current state of the facility, identify and/or negotiate material and equipment disposition requirements, develope plans to deactivate facilities, and negotiate and administratively maintain the desired facility turnover endpoint specifications. Establish and maintain a long-term archive of facility information.		
SYNTHESIS DEFINITION		
Develop a generic type 1 deactivation plan. Augment the generic plan with facility specific planning. Use formal design and configuration control procedures. Provide the characterization data needed by disposition activities using current knowledge, walk downs, and supplemental investigations. Use a graded approach for characterization.		
Product	***Description***	***Source/Destination Function(s)***

(Only physical products addressed in 4.0)

Table 1-20. Stabilize & Reconfigure Facilities For Minimum Surveillance (Type 1 Fcity).

[4.1.1.3] Stabilize & Reconfigure Facilities For Minimum Surveillance (Type 1 Fcity) Deactivates nonessential systems, system components, and physical structures, and takes other actions as required to minimize environmental, public, and personnel hazards. Takes these actions consistent with minimizing continuing facility costs.		
SYNTHESIS DEFINITION Type 1 facilities will convert to type 2's as soon as possible. Type 2 facilities will consolidate SNM/NM/NF materials early in the deactivation process to minimize the size and complexity of the safety and compliance envelop. Type 1 facility personnel will perform any initial stabilization or preparation activities involving SNM/NM/NF materials and radioactive waste for disposition either on or off site.		
Product	***Description***	***Source/Destination Function(s)***
Stabilized Type 1 Facility	*Type 1 facility with initial stabilization or preparation activities involving SNM/NM/NF materials and radioactive waste.*	from: 4.1.1.3 to: 4.1.1.4

Table 1-21. Disposition Currently Identified Radioactive Materials Held As A Potential Product & Special Nuclear Material (Type 1 Fcity).

[4.1.1.4] Disposition Currently Identified Radioactive Materials Held As A Potential Product & Special Nuclear Material (Type 1 Fcity) Collects and prepares materials for temporary storage and transfer, and transports materials out of the facility.		
SYNTHESIS DEFINITION Perform the categorization, consolidation and prepare for disposal of SNM/NM/NF material early in the facility deactivation process, and deactivate all other portions of the facility while maintaining the necessary safety and compliance envelope.		
Product	***Description***	***Source/Destination Function(s)***
SNM/NM/NF Recovered from Deactivation	*SNM/NM/NF removed from a facility in order to place it in a deactivated state.*	from: 4.1, 4.1.1, 4.1.1.4 to: 4.7, 4.7.3
Stabilized Type 2 Facility	*Type 2 facility with stabilized radioactive materials.*	from: 4.1.1, 4.1.1.4 to: 4.1.2, 4.1.2.1
Transferrable Resources from Deactivation *is a constituent of:* • Transferrable Resources	*Equipment, components, or materials from deactivation cleaned up to acceptable levels and having a new owner identified.*	from: 4.1, 4.1.1, 4.1.1.4, 4.1.2, 4.1.2.3, 4.1.3, 4.1.3.3, 4.1.4 , 4.1.4.3 to: (5), (5.1), (5.2), (5.3)

Table 1-22. Deactivate Facilities With Radioactive & Hazardous Material (Type 2 Fcity).

[4.1.2] Deactivate Facilities With Radioactive & Hazardous Material (Type 2 Fcity)

Deactivates facilities containing radioactive or hazardous materials, but which do not contain SNM/NM/NF.

SYNTHESIS DEFINITION

Identify and stabilize to an appropriate level, hazardous and radioactive materials; remove radioactive materials which pose an unacceptable risk to ER work; place utilities and facilities interties in a safe minimum maintenance configuration; remove valuable material, and provide secure reentry access: deactivated facilities will not be entered except for surveillance and minimize maintenance (managed degradation) prior to demolition activities.

Product	*Description*	*Source/Destination Function(s)*
Aqueous Waste from Deactivation (Type 2) *is a constituent of:* • Aqueous Waste from Deactivation	*Waste water containing radioactive or hazardous materials resulting from deactivation of type 2 facilities.*	from: 4.1.2, 4.1.2.1, 4.1.2.3 to: (4.5), (4.5.3)
Solid Waste from Deactivation (Type 2) *is a constituent of:* • Solid Waste from Deactivation	*Solid waste materials contaminated with radioactive or hazardous materials resulting from deactivating the type 2 facility and from maintaining the facility prior to deactivation and until demolition or transfer.*	from: 4.1.2, 4.1.2.1, 4.1.2.3 to: (4.3), (4.3.2), (4.3.2.2)
Stabilized Type 3 Facility	*Type 3 facility with stabilized hazardous material.*	from: 4.1.2, 4.1.2.3 to: 4.1.3, 4.1.3.1
Tank Waste from Deactivation (Type 2) *is a constituent of:* • Tank Waste from Deactivation	*Tank waste materials resulting from deactivation of type 2 facilities containing a high level of hazardous or mixed waste.*	from: 4.1.2, 4.1.2.1, 4.1.2.3 to: (4.2), (4.2.1), (4.2.1.4)
Transferrable Resources from Deactivation *is a constituent of:* • Transferrable Resources	*Equipment, components, or materials from deactivation cleaned up to acceptable levels and having a new owner identified.*	from: 4.1, 4.1.1, 4.1.1.4, 4.1.2, 4.1.2.3, 4.1.3, 4.1.3.3, 4.1.4, 4.1.4.3 to: (5), (5.1), (5.2), (5.3)

Table 1-23. Maintain Safety & Compliance Envelope (Type 2 Fcity).

[4.1.2.1] Maintain Safety & Compliance Envelope (Type 2 Fcity)

Assesses and maintains the facility structure and its operations in a safe condition. Maintains a qualified facility staff, and maintain required facility and operating documentation.

SYNTHESIS DEFINITION

Only those systems and portions of a facility that are necessary to support deactivation and to maintain the safety and compliance envelop during the deactivation process are maintained and operated. All aspects of the safety envelop need to be continually challenged during the deactivation process to reflect the continual reduction in the safety envelop taking place. All facility reconfigurations are performed under OSHA construction requirements.

Product	*Description*	*Source/Destination Function(s)*
Aqueous Waste from Deactivation (Type 2) *is a constituent of:* • Aqueous Waste from Deactivation	*Waste water containing radioactive or hazardous materials resulting from deactivation of type 2 facilities.*	from: 4.1.2, 4.1.2.1, 4.1.2.3 to: (4.5), (4.5.3)
Safe and Compliant Resources (Type 2)	*All necessary resources for safe and compliant operation of type 2 facilities in accordance with governing safety codes and regulations.*	from: 4.1.2.1 to: 4.1.2.2, 4.1.2.3
Solid Waste from Deactivation (Type 2) *is a constituent of:* • Solid Waste from Deactivation	*Solid waste materials contaminated with radioactive or hazardous materials resulting from deactivating the type 2 facility and from maintaining the facility prior to deactivation and until demolition or transfer.*	from: 4.1.2, 4.1.2.1, 4.1.2.3 to: (4.3), (4.3.2), (4.3.2.2)
Tank Waste from Deactivation (Type 2) *is a constituent of:* • Tank Waste from Deactivation	*Tank waste materials resulting from deactivation of type 2 facilities containing a high level of hazardous or mixed waste.*	from: 4.1.2, 4.1.2.1, 4.1.2.3 to: (4.2), (4.2.1), (4.2.1.4)

Table 1-24. Determine Deactivation Plan & Negotiate Turnover Endpoint (Type 2 Fcity).

[4.1.2.2] Determine Deactivation Plan & Negotiate Turnover Endpoint (Type 2 Fcity)		
Assesses the current state of the facility, identifies and/or negotiates material, and equipment disposition requirements, develops plans to deactivate facilities, and negotiates and maintains the desired facility turnover endpoint specifications. Establishes and maintains a long-term archive of facility information.		
SYNTHESIS DEFINITION		
Develop a generic type 2 deactivation plan. Augment the generic plan with facility specific planning. Use formal design and configuration control procedures. Provide the characterization data needed by disposition activities using current knowledge, walk downs, and supplemental investigations. Use a graded approach for characterization.		
Product	***Description***	***Source/Destination Function(s)***

(Only physical products addressed in 4.0)

Table 1-25. Stabilize & Reconfigure Facilities For Minimum Surveillance (Type 2 Fcity).

[4.1.2.3] Stabilize & Reconfigure Facilities For Minimum Surveillance (Type 2 Fcity)

Deactivates nonessential systems, system components, and physical structures, and takes other actions as required to minimize environmental, public, and personnel hazards. Takes these actions consistent with minimizing continuing facility costs.

SYNTHESIS DEFINITION

Type 2 facility personnel should perform any initial stabilization or preparation activities involving radioactive waste for disposition either on or off site.

Product	*Description*	*Source/Destination Function(s)*
Aqueous Waste from Deactivation (Type 2) *is a constituent of:* • Aqueous Waste from Deactivation	*Waste water containing radioactive or hazardous materials resulting from deactivation of type 2 facilities.*	from: 4.1.2, 4.1.2.1, 4.1.2.3 to: (4.5), (4.5.3)
Solid Waste from Deactivation (Type 2) *is a constituent of:* • Solid Waste from Deactivation	*Solid waste materials contaminated with radioactive or hazardous materials resulting from deactivating the type 2 facility and from maintaining the facility prior to deactivation and until demolition or transfer.*	from: 4.1.2, 4.1.2.1, 4.1.2.3 to: (4.3), (4.3.2), (4.3.2.2)
Stabilized Type 3 Facility	*Type 3 facility with stabilized hazardous material.*	from: 4.1.2, 4.1.2.3 to: 4.1.3, 4.1.3.1
Tank Waste from Deactivation (Type 2) *is a constituent of:* • Tank Waste from Deactivation	*Tank waste materials resulting from deactivation of type 2 facilities containing a high level of hazardous or mixed waste.*	from: 4.1.2, 4.1.2.1, 4.1.2.3 to: (4.2), (4.2.1), (4.2.1.4)
Transferrable Resources from Deactivation *is a constituent of:* • Transferrable Resources	*Equipment, components, or materials from deactivation cleaned up to acceptable levels and having a new owner identified.*	from: 4.1, 4.1.1, 4.1.1.4, 4.1.2, 4.1.2.3, 4.1.3, 4.1.3.3, 4.1.4, 4.1.4.3 to: (5), (5.1), (5.2), (5.3)

Table 1-26. Deactivate Facilities With Only Hazardous Material, Including Asbestos (Type 3 Fcity).

[4.1.3] Deactivate Facilities With Only Hazardous Material, Including Asbestos (Type 3 Fcity) Deactivates facilities containing hazardous materials, including asbestos.		
SYNTHESIS DEFINITION Identify and stabilize hazardous materials, place utilities and facilities interties in a safe, minimum maintenance configuration, and provide secure reentry access; deactivated facilities will not be entered except for surveillance and minimize maintenance(managed degradation) prior to ER activities.		
Product	***Description***	***Source/Destination Function(s)***
Aqueous Waste from Deactivation (Type 3) *is a constituent of:* • Aqueous Waste from Deactivation	*Waste water containing hazardous materials resulting from deactivation of type 3 facilities.*	from: 4.1.3, 4.1.3.1 to: (4.5), (4.5.3)
Deactivated Type 3 Facility *is a constituent of:* • Deactivated Facilities	*Type 3 facilities with hazardous materials stabilized, terminated utility services and facitity interties.*	from: 4.1.3 to: (4.4), (4.4.3)
Solid Waste from Deactivation (Type 3) *is a constituent of:* • Solid Waste from Deactivation	*Solid waste materials contaminated with radioactive or hazardous materials resulting from deactivating the type 3 facility and from maintaining the facility prior to deactivation and until demolition or transfer.*	from: 4.1.3, 4.1.3.1 to: (4.3), (4.3.2), (4.3.2.2)
Transferrable Resources from Deactivation *is a constituent of:* • Transferrable Resources	*Equipment, components, or materials from deactivation cleaned up to acceptable levels and having a new owner identified.*	from: 4.1, 4.1.1, 4.1.1.4, 4.1.2, 4.1.2.3, 4.1.3, 4.1.3.3, 4.1.4 , 4.1.4.3 to: (5), (5.1), (5.2), (5.3)

Table 1-27. Maintain Safety & Compliance Envelope (Type 3 Fcity).

[4.1.3.1] Maintain Safety & Compliance Envelope (Type 3 Fcity)

Assessess and maintain the facility structure and its operations in a safe condition. Maintains a qualified facility staff, and maintains required facility and operating documentation.

SYNTHESIS DEFINITION

Only those systems and portions of a facility that are necessary to support facility deactivation or to maintain the safety and compliance envelope during the deactivation process are maintained and operated. All aspects of the safety envelop need to be continually challenged and modified during the deactivation process to reflect the continual reduction in the safety envelop taking place. All facility reconfigurations are performed under OSHA construction requirements. Type 3 facilities have their access restricted, utilities disconnected, and minimal surveillance and maintenance are performed until D&D.

Product	*Description*	*Source/Destination Function(s)*
Aqueous Waste from Deactivation (Type 3) *is a constituent of:* • Aqueous Waste from Deactivation	*Waste water containing hazardous materials resulting from deactivation of type 3 facilities.*	from: 4.1.3, 4.1.3.1 to: (4.5), (4.5.3)
Safe and Compliant Resources (Type 3)	*All necessary resources for safe and compliant operation of type 3 facilities in accordance with governing safety codes and regulations.*	from: 4.1.3.1 to: 4.1.3.2, 4.1.3.3
Solid Waste from Deactivation (Type 3) *is a constituent of:* • Solid Waste from Deactivation	*Solid waste materials contaminated with radioactive or hazardous materials resulting from deactivating the type 3 facility and from maintaining the facility prior to deactivation and until demolition or transfer.*	from: 4.1.3, 4.1.3.1 to: (4.3), (4.3.2), (4.3.2.2)

Table 1-28. Determine Deactivation Plan & Negotiate Turnover Endpoint (Type 3 Fcity).

[4.1.3.2] Determine Deactivation Plan & Negotiate Turnover Endpoint (Type 3 Fcity) Assesses the current state of the facility; identifies and/or negotiates material, and equipment disposition requirements; develops plans to deactivate facilities; and negotiates and maintains the desired facility turnover endpoint specifications. Establishes and maintains a long-term archive of facility information.		
SYNTHESIS DEFINITION Develop a generic type 3 deactivation plan. Augment the generic plan with facility specific planning. Use formal design and configuration control procedures. Provide the characterization data needed by disposition activities using current knowledge, walk downs, and supplemental investigations. Use a graded approach for characterization.		
Product	***Description***	***Source/Destination Function(s)***

(Only physical products addressed in 4.0)

Table 1-29. Stabilize & Reconfigure Facilities For Minimum Surveillance (Type 3 Fcity).

[4.1.3.3] Stabilize & Reconfigure Facilities For Minimum Surveillance (Type 3 Fcity) Deactivates nonessential systems, system components, and physical structures, and takes other actions as required to minimize environmental, public, and personnel hazards. Takes these actions consistent with minimizing continuing facility costs.		
SYNTHESIS DEFINITION Utilize the private sector to perform deactivation of type 3 facilities.		
Product	***Description***	***Source/Destination Function(s)***
Transferrable Resources from Deactivation *is a constituent of:* • Transferrable Resources	*Equipment, components, or materials from deactivation cleaned up to acceptable levels and having a new owner identified.*	from: 4.1, 4.1.1, 4.1.1.4, 4.1.2, 4.1.2.3, 4.1.3, 4.1.3.3, 4.1.4 , 4.1.4.3 to: (5), (5.1), (5.2), (5.3)

Table 1-30. Deactivate Facilities Without Radioactive Or Hazardous Material (Type 4 Fcity).

[4.1.4] Deactivate Facilities Without Radioactive Or Hazardous Material (Type 4 Fcity) Deactivates facilities without radioactive or hazardous materials. Examples include office buildings, etc.		
SYNTHESIS DEFINITION Type 4 facilities are to be deactivated by terminating utilities services and facilities interties, limiting reentry, and conducting only that maintenance needed to minimize risk to disposal workers.		
Product	***Description***	***Source/Destination Function(s)***
Deactivated Type 4 Facility *is a constituent of:* • Deactivated Facilities	*Type 4 facility with terminated utility services and facility interties.*	from: 4.1.4, 4.1.4.3 to: (4.4), (4.4.3)
Transferrable Resources from Deactivation *is a constituent of:* • Transferrable Resources	*Equipment, components, or materials from deactivation cleaned up to acceptable levels and having a new owner identified.*	from: 4.1, 4.1.1, 4.1.1.4, 4.1.2, 4.1.2.3, 4.1.3, 4.1.3.3, 4.1.4 , 4.1.4.3 to: (5), (5.1), (5.2), (5.3)

Table 1-31. Maintain Safety & Compliance Envelope (Type 4 Fcity).

[4.1.4.1] Maintain Safety & Compliance Envelope (Type 4 Fcity) Assesses and maintains the facility structure and its operations in a safe condition. Maintains a qualified facility staff, and maintains required facility and operating documentation.		
SYNTHESIS DEFINITION Only those systems and portions of a facility necessary for the safety and compliance envelope are maintained and operated. All aspects of the safety envelop need to be fine tuned during the deactivation process to reflect the continual reduction in the safety envelop taking place. All facility reconfigurations are performed under OSHA construction requirements. Type 4 facilities will have their access restricted, utilities disconnected, and minimal surveillance and maintenance are performed until D&D.		
Product	***Description***	***Source/Destination Function(s)***
Safe and Compliant Resources (Type 4)	*All necessary resources for safe and compliant operation of type 4 facilities in accordance with governing safety codes . and regulations.*	from: 4.1.4.1 to: 4.1.4.2, 4.1.4.3

Table 1-32. Determine Deactivation Plan & Negotiate Turnover Endpoint (Type 4 Fcity).

[4.1.4.2] Determine Deactivation Plan & Negotiate Turnover Endpoint (Type 4 Fcity)		
Assesses the current state of the facility, identifies and/or negotiates material, and equipment disposition requirements, develops plans to deactivate facilities, and negotiates and maintains the desired facility turnover endpoint specifications. Establishes and maintains a long-term archive of facility information.		
SYNTHESIS DEFINITION		
Develop a generic type 4 deactivation plan. Augment the generic plan with facility specific planning. Use formal design and configuration control procedures. Provide the characterization data needed by disposition activities using current knowledge, walk downs, and supplemental investigations. Use a graded approach for characterization.		
Product	***Description***	***Source/Destination Function(s)***

(Only physical products addressed in 4.0)

Table 1-33. Stabilize & Reconfigure Facilities For Minimum Surveillance (Type 4 Fcity).

[4.1.4.3] Stabilize & Reconfigure Facilities For Minimum Surveillance (Type 4 Fcity)

Deactivates nonessential systems, system components, and physical structures, and takes other actions as required to minimize environmental, public, and personnel hazards. Takes these actions consistent with minimizing continuing facility costs.

SYNTHESIS DEFINITION

Utilize the private sector to perform deactivation of type 4 facilities.

Product	*Description*	*Source/Destination Function(s)*
Deactivated Type 4 Facility *is a constituent of:* • Deactivated Facilities	*Type 4 facility with terminated utility services and facility interties.*	from: 4.1.4, 4.1.4.3 to: (4.4), (4.4.3)
Transferrable Resources from Deactivation *is a constituent of:* • Transferrable Resources	*Equipment, components, or materials from deactivation cleaned up to acceptable levels and having a new owner identified.*	from: 4.1, 4.1.1, 4.1.1.4, 4.1.2, 4.1.2.3, 4.1.3, 4.1.3.3, 4.1.4 , 4.1.4.3 to: (5), (5.1), (5.2), (5.3)

Table 1-34. Remediate Tank Waste. (2 sheets)

[4.2] Remediate Tank Waste Store, treat, and immobilize highly radioactive Hanford waste (existing and future tank waste and the strontium and cesium capsules) in an environmentally sound, safe, and cost effective manner.		
SYNTHESIS DEFINITION Remove all waste from all tanks for subsequent immobilization and disposal.		
Product	***Description***	***Source/Destination Function(s)***
Aqueous Waste from Tank Waste Remediation *aggregates:* • Dispositioned Liquid Effluent	*All liquid waste that meets the acceptance criteria of the Manage Aqueous Wastes function. Includes liquid wastes with low level radioactive and hazardous contamination levels.*	from: 4.2, 4.2.3 to: 4.5, 4.5.3
Closed ILLW Sites *is a constituent of:* • Waste/Materials Dispositioned On-Site	*Solidified or otherwise immobilized and stabilized LLW resulting from high level tank waste processing, in engineered disposal structures and their sites that have been closed with appropriate long-term monitoring instrumentation in place.*	from: 4.2, 4.2.3, 4.2.3.1 to: 200 Area Plateau
Closure-Ready DSTs	*DSTs that have been emptied of waste, decontaminated, isolated, and are ready to be transferred to the site-level Deactivate Facilities function (4.1) (D&D) for closure. This does not preclude external, site reuse.*	from: 4.2, 4.2.3.5 to: 4.1
Closure-Ready SSTs	*SSTs that have been emptied of waste, decontaminated, isolated, and are ready for transfer to the sitewide Deactivate Facilities function (4.1) (D&D) for closure.*	from: 4.2, 4.2.3.5 to: 4.1
Dispositioned Gaseous Effluent *is a constituent of:* • Released Gaseous Effluents	*Conditioned gases appropriate for discharge directly to the environment from process and containment buildings.*	from: 4.2, 4.2.3, 4.2.3.2 to: (Environment)
Dispositioned Solid Waste (TWRS) *is a constituent of:* • Waste/Materials Dispositioned Off-Site • Waste/Materials Dispositioned On-Site	*Dispositioned solid waste includes all packaged and shipped waste that meets the disposal criteria for the appropriate disposal destination, including sanitary, hazardous, mixed, and radioactive wastes. This includes failed melter packages as high-level solid waste to a geologic repository, minus any scrap glass that can be fed back into the IHLW process via output interface 4.2.3.4 O7, Scrap Glass.*	from: 4.2, 4.2.3, 4.2.3.4 to: (Offsite Disposal Site), (On-Site Disposal System)

Table 1-34. Remediate Tank Waste. (2 sheets)

Excess Tank Waste Facilities	*TWRS (non-tank) facilities that have been emptied, decontaminated, disabled, except for essential surveilance and monitoring systems and are ready for transfer to the site-level Deactivate Facilities (4.1) function.*	from: 4.2, 4.2.3, 4.2.3.5 to: 4.1
Immobilized HLW *is a constituent of:* • Waste/Materials Dispositioned Off-Site	*Sealed containers of immobilized HLW derived from treatment of tank wastes (e.g., existing and new tank wastes). The containers of IHLW are placed in a transport cask, that is loaded onto a transport vehicle. At the time of shipment the waste will be certified to meet repository acceptance requirements.*	from: 4.2, 4.2.2, 4.2.2.4 to: Yucca Mountain
Immobilized TRU Waste *is a constituent of:* • Waste/Materials Dispositioned Off-Site	*Solidified TRU waste sealed in containers, with required characterization information, and transport casks along with the transport vehicle delivered to the designated WIPP Site Facility.*	from: 4.2, 4.2.2, 4.2.2.5 to: WIPP
OverPacked Capsules *is a constituent of:* • Waste/Materials Dispositioned Off-Site	*Cesium and strontium capsules placed in an overpack container and certified for transfer to the HLW repository.*	from: 4.2, 4.2.2, 4.2.2.4 to: Yucca Mountain
Solid Waste from Tank Waste Remediation	*Dispositioned solid waste includes all packaged solid waste that meets acceptance criteria of Remediate Solid Waste function. Includes hazardous, mixed and radioactive wastes, minus any scrap glass that is fed back into the IHLW process.*	from: 4.2, 4.2.3 to: 4.3, 4.3.2, 4.3.2.2
Transferrable Resources from Tank Waste Remediation *is a constituent of:* • Transferrable Resources *aggregates:* • Reusable Facilities • Reusable Materials for Site	*Equipment, components, or materials resulting from tank waste remediation cleaned up to acceptable levels and having a new owner identified.*	from: 4.2 to: (5), (5.1), (5.2), (5.3)

Table 1-35. Manage Tank Waste (MTW). (2 sheets)

[4.2.1] Manage Tank Waste (MTW)

Manage existing tank waste (e.g., waste contained in DSTs, SSTs, and miscellaneous tanks), new tank waste from site level interfaces (e.g., facility operations, D&D, ER), and in-process waste (e.g., pretreated HLW, pretreated LLW, pretreated TRU waste) from TWRS. Manage tank waste includes safe compliant storage, waste characterization, waste retrieval, waste concentration, and waste transfer to other facilities or processes.

The waste will continue to be managed until all of the waste is removed from all of the tanks.

SYNTHESIS DEFINITION

Safety documentation for the existing systems identify the physical attributes of each system to insure the public and worker safety. Interim Safety Basis documentation identifies the specific upgrades to SSTs and DSTs to insure the public and worker safety where formal Safety Analysis Reports have not been updated to current standards.

An evaluation of upgrades required to achieve safe management of tank wastes is presented in WHC-EP-0392, Tank Farm Restoration and Upgrade Program Plan. The plan estabilishes a methodology to prioritize upgrade projects based on risks created by current conditions. Upgrades will be accomplished using a phased approach to compliance, which balances costs with the associated risks and benefits in order to achieve compliance with the applicable environmental, safety, and health standards established by Federal, State, and local laws; DOE Orders; and Hanford Site requirements. Agreements negotiated in the TPA (M-43) establish a major milestone for completion of upgrades and associated interim milestones for tank ventilation, instrumentation, electrical, and transfer system upgrades.

Relaxation of any constraint negating or limiting the need for upgrades will be based on documented compliance decisions made by government officials and regulating agencies as appropriate.

Safety documentation covering the exsiting portion of the Waste Storage System are as follows:

WHC-SD-WM-SIB-001, Vol. 1, "Hanford Site Tank Farm Facility Interim Safety Basis"

WHC-SD-WM-SAR-023, "242A Evaporator/Crystallizer Safety Analysis Report"

WHC-SD-WM-SAR-005, "Waste Encapsulation Storage Facility Safety Analysis Report"

Product	*Description*	*Source/Destination Function(s)*
Ceslum/Strontium Capsules	*Cs/Sr capsules in storage at Hanford or returned from offsite sources to Hanford.*	from: 4.2.1, 4.2.1.4 to: 4.2.2, 4.2.2.3

Table 1-35. Manage Tank Waste (MTW). (2 sheets)

MTW SGW & EF *aggregates:* • Excess Facilities from MTW • Laboratory Waste from Characterization • MTW SG Gaseous Waste • MTW SG Liquid Effluent • MTW SG Solid Waste	*All excess facilities and wastes, with required characterization information, generated during MTW activities except that portion that will be processed into Immobilized High-Level Waste (IHLW), Immobilized TRU Waste (ITRU), or Immobilized Low-Level Tank Waste (ILLTW). This includes equipment and facilities that have fulfilled their purpose but are now available for appropriate reuse or final disposition: mixed, hazardous, or radiological waste in liquid or solid form (including spent samples) being returned from laboratories that originated in the MTW function; and all nonradioactive, nonhazardous liquid and solid effluent. Also included in the tank waste is the following nonprocess solid waste: fallen equipment, severed pipes, lead bricks, cobalt slugs, fuel pin elements, etc.*	from: 4.2.1 to: 4.2.3
Pretreated HLW for Immobilization	*Pretreated HLW, with required characterization information, blended and/or concentrated to final composition meeting specifications for feed to immobilization.*	from: 4.2.1, 4.2.1.4 to: 4.2.2, 4.2.2.2
Pretreated LLW for Immobilization	*Tank waste that meets the LLW feed specifications for feed to the LLW immobilization process.*	from: 4.2.1, 4.2.1.4 to: 4.2.3, 4.2.3.1
Pretreated TRU Waste for Immobilization	*Pretreated TRU Tank Waste, with required characterization information, blended and/or concentrated to final composition meeting specifications for feed to immobilization.*	from: 4.2.1, 4.2.1.4 to: 4.2.2, 4.2.2.2
Tank Waste for Pretreatment	*Tank waste to be pretreated. This includes partially pretreated waste and untreated waste.*	from: 4.2.1, 4.2.1.4 to: 4.2.2, 4.2.2.1

Table 1-36. Store Waste.

[4.2.1.1] Store Waste

Contain and monitor SST waste, waste in miscellaneous tanks, and cesium and strontium capsules. Receive, contain and monitor DST waste and in-process waste. Define and initiate actions for mitigation / resolution of safety issues. Waste is currently being received, contained and monitored. This will continue until all waste is removed for final processing.

SYNTHESIS DEFINITION

Continue storage until waste is needed for processing, improve system to achieve safe TPA (M-40) and compliant storage TPA (M-41), and construct additional tanks as needed TPA (M-42).

Product	*Description*	*Source/Destination Function(s)*
Cesium/Strontium Capsules for Retrieval	*Cesium and strontium capsules residing in storage that have been identified for transfer to the Process Waste function for final disposition.*	from: 4.2.1.1 to: 4.2.1.3
Excess Facilities from MTW *is a constituent of:* • MTW SGW & EF	*MTW excess facilities that have reached their useful life and have no currently identifiable or planned programmatic use in the MTW function.*	from: 4.2.1.1, 4.2.1.3, 4.2.1.4, 4.2.1.5 to: 4.2.3.5
MTW SG Gaseous Waste *is a constituent of:* • MTW SGW & EF	*Radioactive and mixed gaseous waste generated by the Manage Tank Waste function that requires treatment prior to discharging to the environment.*	from: 4.2.1.1, 4.2.1.2, 4.2.1.3, 4.2.1.4, 4.2.1.5 to: 4.2.3.2
MTW SG Liquid Effluent *is a constituent of:* • MTW SGW & EF	*Liquids generated during the operation of equipment and systems that are or may be contaminated with trace amounts of hazardous or radioactive components and as minimum require monitoring to insure regulatory compliance. Included are liquids discharged from single pass cooling systems, and steam and process condensate generated from the concentrate function. Low level liquid waste generated by any process will be treated as tank waste.*	from: 4.2.1.1, 4.2.1.2, 4.2.1.3, 4.2.1.5 to: 4.2.3.3
MTW SG Solid Waste *is a constituent of:* • MTW SGW & EF	*Solid waste generated from functions associated with managing tank waste.*	from: 4.2.1.1, 4.2.1.2, 4.2.1.3, 4.2.1.4, 4.2.1.5 to: 4.2.3.4
Tank Waste for Retrieval	*Wastes stored in underground storage tanks (DSTs, SSTs, and miscellaneous tanks).*	from: 4.2.1.1 to: 4.2.1.3
Tank Waste for Sampling	*Solid, liquid, and gaseous substances residing within the Store Waste function that have been identified for characterization requiring laboratory or in situ analysis.*	from: 4.2.1.1 to: 4.2.1.2

Table 1-37. Characterize Waste.

[4.2.1.2] Characterize Waste

Provide physical, chemical, and radiological characterization information in support of process control, safety issue resolution, treatment, storage, or disposal (TSD) decisions, or other TWRS needs. Waste characterization activities include sample acquisition and transfer to laboratory, laboratory analysis of samples, performance of in situ measurements, and review of historical data and lab results as necessary to complete characterization.

Waste characterization is currently being performed and will continue until the waste is retrieved and the waste tanks meet the Manage System Generated Waste (MSGW) & Excess Facilities (EF) acceptance criteria.

SYNTHESIS DEFINITION

Use existing waste information and provide new data as needed to develop process flowsheets and to meet TPA (M-44) milestones.

Product	*Description*	*Source/Destination Function(s)*
Laboratory Waste from Characterization *is a constituent of:* • MTW SGW & EF	*Liquid and slurry wastes generated by the laboratories during handling, preparation, and analysis of MTW Characterization Samples. This waste also includes excess samples that are disposed of by the laboratory. These wastes are collected and transfered to DST's and Liquid SW for Storage from the MSGW & EF function.*	from: 4.2.1.2 to: (4.2.3)
MTW SG Gaseous Waste *is a constituent of:* • MTW SGW & EF	*Radioactive and mixed gaseous waste generated by the Manage Tank Waste function that requires treatment prior to discharging to the environment.*	from: 4.2.1.1, 4.2.1.2, 4.2.1.3, 4.2.1.4, 4.2.1.5 to: 4.2.3.2
MTW SG Liquid Effluent *is a constituent of:* • MTW SGW & EF	*Liquids generated during the operation of equipment and systems that are or may be contaminated with trace amounts of hazardous or radioactive components and as minimum require monitoring to insure regulatory compliance. Included are liquids discharged from single pass cooling systems, and steam and process condensate generated from the concentrate function. Low level liquid waste generated by any process will be treated as tank waste.*	from: 4.2.1.1, 4.2.1.2, 4.2.1.3, 4.2.1.5 to: 4.2.3.3
MTW SG Solid Waste *is a constituent of:* • MTW SGW & EF	*Solid waste generated from functions associated with managing tank waste.*	from: 4.2.1.1, 4.2.1.2, 4.2.1.3, 4.2.1.4, 4.2.1.5 to: 4.2.3.4

Table 1-38. Retrieve Waste (RW). (2 sheets)

[4.2.1.3] Retrieve Waste (RW)

Remove tank waste from SSTs, DSTs, and miscellaneous tanks, and remove the cesium and strontium capsules from storage for transfer to other facilities. Wastes to be removed from the tanks include liquids, saltcake, sludges, slurries, and solids (e.g., failed equipment, concrete, rocks, lead bricks, samarium balls, and cobalt slugs). Solids will be removed only to the extent necessary to prevent interference with the retrieval of other wastes or as required to complete closure activities.

Waste retrieval has been initiated. Sufficient waste will be removed to allow closure without further removal of material.

SYNTHESIS DEFINITION

A combination of mechanical and hydraulic processes will be used for retrieval. Dome mounted and robotic arm combinations will be used for positioning retrieval mechanisms. Specific retrieval specifications are provided in TPA M-45.

Product	*Description*	*Source/Destination Function(s)*
Excess Facilities from MTW *is a constituent of:* • MTW SGW & EF	*MTW excess facilities that have reached their useful life and have no currently identifiable or planned programmatic use in the MTW function.*	from: 4.2.1.1, 4.2.1.3, 4.2.1.4, 4.2.1.5 to: 4.2.3.5
MTW SG Gaseous Waste *is a constituent of:* • MTW SGW & EF	*Radioactive and mixed gaseous waste generated by the Manage Tank Waste function that requires treatment prior to discharging to the environment.*	from: 4.2.1.1, 4.2.1.2, 4.2.1.3, 4.2.1.4, 4.2.1.5 to: 4.2.3.2
MTW SG Liquid Effluent *is a constituent of:* • MTW SGW & EF	*Liquids generated during the operation of equipment and systems that are or may be contaminated with trace amounts of hazardous or radioactive components and as minimum require monitoring to insure regulatory compliance. Included are liquids discharged from single pass cooling systems, and steam and process condensate generated from the concentrate function. Low level liquid waste generated by any process will be treated as tank waste.*	from: 4.2.1.1, 4.2.1.2, 4.2.1.3, 4.2.1.5 to: 4.2.3.3
MTW SG Solid Waste *is a constituent of:* • MTW SGW & EF	*Solid waste generated from functions associated with managing tank waste.*	from: 4.2.1.1, 4.2.1.2, 4.2.1.3, 4.2.1.4, 4.2.1.5 to: 4.2.3.4
Retrieved Cesium/Strontium Capsules	*Cesium and strontium capsules removed from storage to initiate transfer to the Process Waste function for final disposition.*	from: 4.2.1.3 to: 4.2.1.4

Table 1-38. Retrieve Waste (RW). (2 sheets)

Retrieved Tank Waste	*Waste removed from underground storage tanks (DSTs, SSTs, and miscellaneous tanks) with required characterization information, that will ultimately be processed by the IHLW, ITRU, or ILLW functions and is ready for transfer to other facilities.*	from: 4.2.1.3 to: 4.2.1.4

Table 1-39. Transfer Waste. (2 sheets)

[4.2.1.4] Transfer Waste

Move retrieved liquid, slurry, and solid tank waste from SSTs, DSTs, miscellaneous tanks, and the cesium and strontium capsules from WESF to treatment facilities or other storage locations. Move new tank waste from facilities outside of TWRS to treatment facilities or to storage. This function does not encompass waste sample transfers, transfers within treatment facilities, or transfers to and from the evaporator, but does include the transfers of in-process waste and transfers of secondary waste.

This will continue until all waste is transferred from the tanks.

SYNTHESIS DEFINITION

Transfer approach will depend on the detailed requirements of a specific transfer problem. No choice is ruled out at this point.

Product	*Description*	*Source/Destination Function(s)*
Cesium/Strontium Capsules	*Cs/Sr capsules in storage at Hanford or returned from offsite sources to Hanford.*	from: 4.2.1, 4.2.1.4 to: 4.2.2, 4.2.2.3
Concentrate Waste Feed	*Liquid waste, with required characterization information, delivered to the evaporator for processing into a low-volume concentrate.*	from: 4.2.1.4 to: 4.2.1.5
Conditioned Waste for Sampling	*Solid and liquid wastes that have been conditioned before initiating transfer that have been identified for characterization requiring laboratory or in situ analysis.*	from: 4.2.1.4 to: 4.2.1.2
Excess Facilities from MTW *is a constituent of:* • MTW SGW & EF	*MTW excess facilities that have reached their useful life and have no currently identifiable or planned programmatic use in the MTW function.*	from: 4.2.1.1, 4.2.1.3, 4.2.1.4, 4.2.1.5 to: 4.2.3.5
MTW SG Gaseous Waste *is a constituent of:* • MTW SGW & EF	*Radioactive and mixed gaseous waste generated by the Manage Tank Waste function that requires treatment prior to discharging to the environment.*	from: 4.2.1.1, 4.2.1.2, 4.2.1.3, 4.2.1.4, 4.2.1.5 to: 4.2.3.2
MTW SG Solid Waste *is a constituent of:* • MTW SGW & EF	*Solid waste generated from functions associated with managing tank waste.*	from: 4.2.1.1, 4.2.1.2, 4.2.1.3, 4.2.1.4, 4.2.1.5 to: 4.2.3.4
Pretreated HLW for Immobilization	*Pretreated HLW, with required characterization information, blended and/or concentrated to final composition meeting specifications for feed to immobilization.*	from: 4.2.1, 4.2.1.4 to: 4.2.2, 4.2.2.2
Pretreated LLW for Immobilization	*Tank waste that meets the LLW feed specifications for feed to the LLW immobilization process.*	from: 4.2.1, 4.2.1.4 to: 4.2.3, 4.2.3.1

Table 1-39. Transfer Waste. (2 sheets)

Pretreated TRU Waste for Immobilization	*Pretreated TRU Tank Waste, with required characterization information, blended and/or concentrated to final composition meeting specifications for feed to immobilization.*	from: 4.2.1, 4.2.1.4 to: 4.2.2, 4.2.2.2
Tank Waste for Pretreatment	*Tank waste to be pretreated. This includes partially pretreated waste and untreated waste.*	from: 4.2.1, 4.2.1.4 to: 4.2.2, 4.2.2.1
Waste to Storage	*Transferable waste, including supernates and interstitial liquids from saltwell pumping, transferred from one storage tank to another to provide additional capacity for new waste entering the Manage Tank Waste function or to mitigate or resolve a safety issue. Also, includes waste externally generated and introduced into the Manage Tank Waste function requiring storage prior to processing or disposal. The concentrate created by the Concentrate Waste function is returned to storage as Waste to Storage as well as In-process wastes returned for the Process Waste function.*	from: 4.2.1.4 to: 4.2.1.1

Table 1-40. Concentrate Waste. (2 sheets)

[4.2.1.5] Concentrate Waste

Remove excess water from liquid DST waste to reduce volume of waste feed for immobilization and to free up storage capacity in existing tanks.

SYNTHESIS DEFINITION

Remove excess water from tank wastes of sufficient purity to be treated as an liquid effluent for eventual discharge to the environment. The concentrated tank waste as a product of this process will remain pumpable without dilution when returned to the DSTs for storage.

Specifically , the Waste Concentration System is comprised of the existing facility known as the 242-A Evaporator/Crystallizer.

Product	*Description*	*Source/Destination Function(s)*
Excess Facilities from MTW *is a constituent of:* • MTW SGW & EF	*MTW excess facilities that have reached their useful life and have no currently identifiable or planned programmatic use in the MTW function.*	from: 4.2.1.1, 4.2.1.3, 4.2.1.4, 4.2.1.5 to: 4.2.3.5
MTW SG Gaseous Waste *is a constituent of:* • MTW SGW & EF	*Radioactive and mixed gaseous waste generated by the Manage Tank Waste function that requires treatment prior to discharging to the environment.*	from: 4.2.1.1, 4.2.1.2, 4.2.1.3, 4.2.1.4, 4.2.1.5 to: 4.2.3.2
MTW SG Liquid Effluent *is a constituent of:* • MTW SGW & EF	*Liquids generated during the operation of equipment and systems that are or may be contaminated with trace amounts of hazardous or radioactive components and as minimum require monitoring to insure regulatory compliance. Included are liquids discharged from single pass cooling systems, and steam and process condensate generated from the concentrate function. Low level liquid waste generated by any process will be treated as tank waste.*	from: 4.2.1.1, 4.2.1.2, 4.2.1.3, 4.2.1.5 to: 4.2.3.3
MTW SG Solid Waste *is a constituent of:* • MTW SGW & EF	*Solid waste generated from functions associated with managing tank waste.*	from: 4.2.1.1, 4.2.1.2, 4.2.1.3, 4.2.1.4, 4.2.1.5 to: 4.2.3.4

Table 1-40. Concentrate Waste. (2 sheets)

Waste Concentrate	*The concentrated product generated by removal of excess moisture from tank waste using a vacuum evaporator, and returned to the DST's.* *The Evaporator can produce two products: (1) double-shell slurry (DSS) and (2) DSSF. These products are defined by their relationship to the sodium-aluminate boundary. When this boundary is crossed, aluminate solids (specifically sodium-aluminate crystals) precipitate out of solution and form DSS, the most concentrated product the Evaporator can produce. Although sodium-aluminate crystals represent only a small percentage of the solids in DSS, they greatly increase its viscosity (up to 100 cP) making it more difficult to pump from DSTs once transferred from the Evaporator. Although it has been produced in the past, there currently are no plans to produce DSS. Processing of complexed wastes and phosphate wastes in the Evaporator requires more characterization to identify the end product density, temperature, and boiling point. Typically, these wastes enter the concentrator as dilute feeds and require multiple passes through the Evaporator to achieve the desired product concentration. Phosphate and complexed wastes cannot be concentrated to a DSS product because these wastes have very small or no dissolved aluminates.* *The DSSF is defined as a slurry with a chemical composition that is below the sodium-aluminate boundary but that could be concentrated past the sodium-aluminate boundary, with a single additional pass through the Evaporator. In contrast to DSS, the viscosity of SDDF typically ranges from 20 to 40 cP. Double-shell slurry feed is the planned product of the Evaporator.*	from: 4.2.1.5 to: 4.2.1.4
Waste Concentrate for Sampling	*Concentrated waste product of the Concentrate Waste function that have been identified for characterization requiring laboratory or in situ analysis as required for process control.*	from: 4.2.1.5 to: 4.2.1.2
Waste Concentration Feed for Sampling	*Liquid or slurry waste feed to the Concentrate Waste function that have been identified for characterization requiring laboratory or in situ analysis as required for process control.*	from: 4.2.1.5 to: 4.2.1.2

Table 1-41. Process Waste. (2 sheets)

[4.2.2] Process Waste

Pretreat tank waste (including DST and SST waste, line waste, and cesium and strontium capsules, if required) to separate the low-level, high-level, and TRU waste, and reusable materials fractions; immobilize the HLW and TRU waste fractions; and certify the immobilized wastes for disposal in a geologic repository. This includes interim storage of and load out capability for the immobilized HLW and TRU waste prior to offsite shipment. Waste excluded from processing is the underground storage tanks and support structures, production reactor fuel, radioactive waste at reactors, disposal facilities, transfer lines, and cribs, ponds, and ditches.

The Process Waste function is initiated upon waste retrieval for treatment and will continue until the last IHLW/ITRU (Immobilized HLW, Immobilized TRU) package is shipped to a geologic repository.

SYNTHESIS DEFINITION

Separate tank waste into high level/low level fractions.

Product	*Description*	*Source/Destination Function(s)*
Immobilized HLW *is a constituent of:* • Waste/Materials Dispositioned Off-Site	*Sealed containers of immobilized HLW derived from treatment of tank wastes (e.g., existing and new tank wastes). The containers of IHLW are placed in a transport cask, that is loaded onto a transport vehicle. At the time of shipment the waste will be certified to meet repository acceptance requirements.*	from: 4.2, 4.2.2, 4.2.2.4 to: Yucca Mountain
Immobilized TRU Waste *is a constituent of:* • Waste/Materials Dispositioned Off-Site	*Solidified TRU waste sealed in containers, with required characterization information, and transport casks along with the transport vehicle delivered to the designated WIPP Site Facility.*	from: 4.2, 4.2.2, 4.2.2.5 to: WIPP
In-Process Waste	*Pretreated HLW, pretreated TRU tank waste, pretreated LLW and partially pretreated waste, with required characterization information, suitable for transfer to Manage Tank Waste (4.2.1) function.*	from: 4.2.2, 4.2.2.1 to: 4.2.1, 4.2.1.4
OverPacked Capsules *is a constituent of:* • Waste/Materials Dispositioned Off-Site	*Cesium and strontium capsules placed in an overpack container and certified for transfer to the HLW repository.*	from: 4.2, 4.2.2, 4.2.2.4 to: Yucca Mountain

Table 1-41. Process Waste. (2 sheets)

PW SGW & EF *aggregates:* • Excess Facilities from PW • PW SG Gaseous Waste • PW SG Liquid Effluent • PW SG Solid Waste	*Excess facilities with waste and miscellaneous wastes generated from processing of tank waste.* *a.Excess Facilities for PW* *Facilities fulfilling their purpose but are now available for appropriate reuse, following cleaning.* *b.Miscellaneous Wastes* *Any mixed or radioactive waste, industrial waste, gaseous waste,TRU solid waste, dangerous waste, uranium, chemicals, liquid effluents, or sanitary waste, requiring conditioning by the Manage System Generated Waste and Excess Facilities function prior to transfer to appropriate interface for reuse or final disposition.*	from: 4.2.2 to: 4.2.3

[4.2.2.1] Pretreat Waste

Separate tank waste into a HLW/TRU fraction and LLW fractions suitable for immobilization and into a fraction suitable for reuse. Pretreatment includes: preparing all retrieved tank waste for separations processes, separating the waste constituents suitable for immobilization as LLW and for reuse, and converting the remaining waste into feeds to the HLW and TRU waste immobilization system. Tank waste will be pretreated when needed to: provide feed for LLW immobilization and/or provide feed for HLW and TRU immobilization.

Pretreatment will continue until all tank waste has been converted to feed for immobilization processes.

SYNTHESIS DEFINITION

Pretreat tank waste by separation into a HL/TRU fraction, using the enhanced sludge wash process.

Product	*Description*	*Source/Destination Function(s)*
Excess Facilities from PW *is a constituent of:* • PW SGW & EF	*PW excess facilities that have reached their useful life and have no currently identifiable or planned programmatic use in the PW function.*	from: 4.2.2.1, 4.2.2.2, 4.2.2.3, 4.2.2.4, 4.2.2.5 to: 4.2.3.5
In-Process Waste	*Pretreated HLW, pretreated TRU tank waste, pretreated LLW and partially pretreated waste, with required characterization information, suitable for transfer to Manage Tank Waste (4.2.1) function.*	from: 4.2.2, 4.2.2.1 to: 4.2.1, 4.2.1.4
PW SG Gaseous Waste *is a constituent of:* • PW SGW & EF	*Gaseous waste, with required characterization information, generated from functions associated with processing tank waste.*	from: 4.2.2.1, 4.2.2.2, 4.2.2.3 to: 4.2.3.2
PW SG Liquid Effluent *is a constituent of:* • PW SGW & EF	*Liquid waste, with required characterization information, generated from functions associated with processing tank waste.*	from: 4.2.2.1, 4.2.2.2, 4.2.2.3, 4.2.2.4, 4.2.2.5 to: 4.2.3.3
PW SG Solid Waste *is a constituent of:* • PW SGW & EF	*Solid waste, with required characterization information, generated from functions associated with processing tank waste.*	from: 4.2.2.1, 4.2.2.2, 4.2.2.3, 4.2.2.4, 4.2.2.5 to: 4.2.3.4

Table 1-42. Pretreat Waste.

Table 1-43. Immobilize HLW/TRU Waste.

[4.2.2.2] Immobilize HLW/TRU Waste

Immobilize pretreated HLW and TRU waste, seal the immobilized waste into primary containers, decontaminate the container outer surfaces, and test the integrity of the sealed containers.

Tank waste immobilization will begin when the immobilization faciliy is authorized to begin hot operations and will continue until all of the HLW/TRU is immobilized.

Note: DOE/WIPP requirements apply only if a decision is made to dispose of ITRU at WIPP.

SYNTHESIS DEFINITION

Immobilize the HLW/TRU fraction in borosilicate glass.

Product	*Description*	*Source/Destination Function(s)*
Excess Facilities from PW *is a constituent of:* • PW SGW & EF	*PW excess facilities that have reached their useful life and have no currently identifiable or planned programmatic use in the PW function.*	from: 4.2.2.1, 4.2.2.2, 4.2.2.3, 4.2.2.4, 4.2.2.5 to: 4.2.3.5
IHLW for Storage	*IHLW sealed in containers suitable for interim storage and emplacement in the HLW geologic repository.*	from: 4.2.2.2 to: 4.2.2.4
ITRU Waste for Storage	*ITRU sealed in containers suitable for interim storage and emplacement in WIPP/geologic repository (as required).*	from: 4.2.2.2 to: 4.2.2.5
PW SG Gaseous Waste *is a constituent of:* • PW SGW & EF	*Gaseous waste, with required characterization information, generated from functions associated with processing tank waste.*	from: 4.2.2.1, 4.2.2.2, 4.2.2.3 to: 4.2.3.2
PW SG Liquid Effluent *is a constituent of:* • PW SGW & EF	*Liquid waste, with required characterization information, generated from functions associated with processing tank waste.*	from: 4.2.2.1, 4.2.2.2, 4.2.2.3, 4.2.2.4, 4.2.2.5 to: 4.2.3.3
PW SG Solid Waste *is a constituent of:* • PW SGW & EF	*Solid waste, with required characterization information, generated from functions associated with processing tank waste.*	from: 4.2.2.1, 4.2.2.2, 4.2.2.3, 4.2.2.4, 4.2.2.5 to: 4.2.3.4

Table 1-44. Prepare Cs/Sr Capsules for Disposal.

[4.2.2.3] Prepare Cs/Sr Capsules for Disposal Receive Cs/Sr Capsules from storage, prepare capsules for interim storage at Hanford and disposal offsite at HLW geologic repository.		
SYNTHESIS DEFINITION Dispose of Cs and Sr capsules in an overpack appropriate for disposal in a geologic repository. Interim store overpacked capsules in an interim storage facility.		
Product	***Description***	***Source/Destination Function(s)***
Excess Facilities from PW *is a constituent of:* • PW SGW & EF	*PW excess facilities that have reached their useful life and have no currently identifiable or planned programmatic use in the PW function.*	from: 4.2.2.1, 4.2.2.2, 4.2.2.3, 4.2.2.4, 4.2.2.5 to: 4.2.3.5
Overpacked Cs/Sr Capsules for Storage/Disposal	*Cs/Sr capsules in containers/canisters suitable for interim storage and long term disposal offsite.*	from: 4.2.2.3 to: 4.2.2.4
PW SG Gaseous Waste *is a constituent of:* • PW SGW & EF	*Gaseous waste, with required characterization information, generated from functions associated with processing tank waste.*	from: 4.2.2.1, 4.2.2.2, 4.2.2.3 to: 4.2.3.2
PW SG Liquid Effluent *is a constituent of:* • PW SGW & EF	*Liquid waste, with required characterization information, generated from functions associated with processing tank waste.*	from: 4.2.2.1, 4.2.2.2, 4.2.2.3, 4.2.2.4, 4.2.2.5 to: 4.2.3.3
PW SG Solid Waste *is a constituent of:* • PW SGW & EF	*Solid waste, with required characterization information, generated from functions associated with processing tank waste.*	from: 4.2.2.1, 4.2.2.2, 4.2.2.3, 4.2.2.4, 4.2.2.5 to: 4.2.3.4

Table 1-45. Interim Store IHLW.

[4.2.2.4] Interim Store IHLW

Transport sealed canisters of IHLW from the HLW/TRU Immobilization facility location, emplace IHLW canisters in their designated storage locations, monitor canisters for storage containment integrity, and eventually retrieve from storage, prepare, and load IHLW canisters on other trasnport conveyances for offsite shipment.

The IHLW canisters will be received from the HLW/TRU Immobilization facility on a regular basis, daily or every so many days depending on canister size, glass production rate, and scheduled production run and will continue until all HLW has been immobilized. Accumulation of IHLW canisters in interim onsite storage will continue until a geologic repository is readied and authorizes shipment of IHLW canisters to it at which time dispatch of IHLW canisters will commence and continue on a regular basis until the IHLW facility is emptied of IHLW canisters.

Transport overpacked containers of Cs/Sr from overpacking facility, emplace containers in their designated storage locations, monitor containers for storage containment integrity, and eventually retrieve from storage, prepare, and load containers on other transport conveyances for offsite shipment.

SYNTHESIS DEFINITION

Large (10 cubic meters) Self-shielded Containers - Store the IHLW containers within self-shielded containers.

Product	*Description*	*Source/Destination Function(s)*
Excess Facilities from PW *is a constituent of:* • PW SGW & EF	*PW excess facilities that have reached their useful life and have no currently identifiable or planned programmatic use in the PW function.*	from: 4.2.2.1, 4.2.2.2, 4.2.2.3, 4.2.2.4, 4.2.2.5 to: 4.2.3.5
Immobilized HLW *is a constituent of:* • Waste/Materials Dispositioned Off-Site	*Sealed containers of immobilized HLW derived from treatment of tank wastes (e.g., existing and new tank wastes). The containers of IHLW are placed in a transport cask, that is loaded onto a transport vehicle. At the time of shipment the waste will be certified to meet repository acceptance requirements.*	from: 4.2, 4.2.2, 4.2.2.4 to: Yucca Mountain
OverPacked Capsules *is a constituent of:* • Waste/Materials Dispositioned Off-Site	*Cesium and strontium capsules placed in an overpack container and certified for transfer to the HLW repository.*	from: 4.2, 4.2.2, 4.2.2.4 to: Yucca Mountain
PW SG Liquid Effluent *is a constituent of:* • PW SGW & EF	*Liquid waste, with required characterization information, generated from functions associated with processing tank waste.*	from: 4.2.2.1, 4.2.2.2, 4.2.2.3, 4.2.2.4, 4.2.2.5 to: 4.2.3.3
PW SG Solid Waste *is a constituent of:* • PW SGW & EF	*Solid waste, with required characterization information, generated from functions associated with processing tank waste.*	from: 4.2.2.1, 4.2.2.2, 4.2.2.3, 4.2.2.4, 4.2.2.5 to: 4.2.3.4

Table 1-46. Interim Store and Transport ITRU Waste.

[4.2.2.5] Interim Store and Transport ITRU Waste

Transport sealed canisters of ITRU from the HLW/TRU Immobilization facility location, emplace ITRU canisters in their designated storage locations, monitor canisters for storage containment integrity, and eventually retrieve from storage, prepare, load IHLW canisters on trasnport conveyances,and transport to an offsite repository.

The ITRU canisters will be received from the HLW/TRU Immobilization facility on a regular basis, daily or every so many days depending on canister size, glass production rate, and scheduled production run and will continue until all TRU has been immobilized. Accumulation of ITRU canisters in interim onsite storage will continue until a geologic repository is readied and authorizes shipment of ITRU canisters to it at which time dispatch and transport of ITRU canisters will commence and continue on a regular basis until the ITRU facility is emptied of ITRU canisters.

Note: This function and its allocated requirements are valid only if a decision is made to dispose of ITRU at WIPP.

SYNTHESIS DEFINITION

(Products identified from higher level functions. Architecture not yet defined.)

Product	*Description*	*Source/Destination Function(s)*
Excess Facilities from PW *is a constituent of:* • PW SGW & EF	*PW excess facilities that have reached their useful life and have no currently identifiable or planned programmatic use in the PW function.*	from: 4.2.2.1, 4.2.2.2, 4.2.2.3, 4.2.2.4, 4.2.2.5 to: 4.2.3.5
Immobilized TRU Waste *is a constituent of:* • Waste/Materials Dispositioned Off-Site	*Solidified TRU waste sealed in containers, with required characterization information, and transport casks along with the transport vehicle delivered to the designated WIPP Site Facility.*	from: 4.2, 4.2.2, 4.2.2.5 to: WIPP
PW SG Liquid Effluent *is a constituent of:* • PW SGW & EF	*Liquid waste, with required characterization information, generated from functions associated with processing tank waste.*	from: 4.2.2.1, 4.2.2.2, 4.2.2.3, 4.2.2.4, 4.2.2.5 to: 4.2.3.3
PW SG Solid Waste *is a constituent of:* • PW SGW & EF	*Solid waste, with required characterization information, generated from functions associated with processing tank waste.*	from: 4.2.2.1, 4.2.2.2, 4.2.2.3, 4.2.2.4, 4.2.2.5 to: 4.2.3.4

Table 1-47. Manage System Generated Waste & Excess Facilities. (2 sheets)

[4.2.3] Manage System Generated Waste & Excess Facilities

Manage waste and excess facilities generated during the process of remediating TWRS tank waste. Activities to be managed include immobilization of the LLW components, disposition of liquid and gaseous effluent, as well as solid waste and excess facilities, and the recycling of reusable materials.

This effort includes management of miscellaneous wastes and processing to transfer failed equipment like pumps and melters to the organization responsible for ultimate disposal. This activity will terminate when all tank waste is remediated and all excess facilities have been turned over to the site-level Deactivate Facilities function (4.1) for final clean-up and closure.

SYNTHESIS DEFINITION

Process system generated waste to levels appropriate for receipt by other site functions; dispose system generated HLW/TRU waste within this functional set.

Product	*Description*	*Source/Destination Function(s)*
Aqueous Waste from Tank Waste Remediation *aggregates:* • Dispositioned Liquid Effluent	*All liquid waste that meets the acceptance criteria of the Manage Aqueous Wastes function. Includes liquid wastes with low level radioactive and hazardous contamination levels.*	from: 4.2, 4.2.3 to: 4.5, 4.5.3
Closed ILLW Sites *is a constituent of:* • Waste/Materials Dispositioned On-Site	*Solidified or otherwise immobilized and stabilized LLW resulting from high level tank waste processing, in engineered disposal structures and their sites that have been closed with appropriate long-term monitoring instrumentation in place.*	from: 4.2, 4.2.3, 4.2.3.1 to: 200 Area Plateau
Dispositioned Gaseous Effluent *is a constituent of:* • Released Gaseous Effluents	*Conditioned gases appropriate for discharge directly to the environment from process and containment buildings.*	from: 4.2, 4.2.3, 4.2.3.2 to: (Environment)
Dispositioned Liquid Effluent *is a constituent of:* • Aqueous Waste from Tank Waste Remediation	*Treated liquid effluent from the DLE function to the Manage Aqueous Waste function. May contain environmentally releasable effluent.*	from: 4.2.3, 4.2.3.3 to: (4.5), (4.5.3)
Dispositioned Solid Waste (TWRS) *is a constituent of:* • Waste/Materials Dispositioned Off-Site • Waste/Materials Dispositioned On-Site	*Dispositioned solid waste includes all packaged and shipped waste that meets the disposal criteria for the appropriate disposal destination, including sanitary, hazardous, mixed, and radioactive wastes. This includes failed melter packages as high-level solid waste to a geologic repository, minus any scrap glass that can be fed back into the IHLW process via output interface 4.2.3.4 O7, Scrap Glass.*	from: 4.2, 4.2.3, 4.2.3.4 to: (Offsite Disposal Site), (On-Site Disposal System)

Table 1-47. Manage System Generated Waste & Excess Facilities. (2 sheets)

Excess Tank Waste Facilities	*TWRS (non-tank) facilities that have been emptied, decontaminated, disabled, except for essential surveilance and monitoring systems and are ready for transfer to the site-level Deactivate Facilities (4.1) function.*	from: 4.2, 4.2.3, 4.2.3.5 to: 4.1
Liquid SW for Storage *aggregates:* • SW from Immobilize & Dispose LLW	*Liquid secondary waste for storage, with required characterization information, produced in the MSGW & EF (4.2.3) function. This includes cleaning waste, lab waste from sample characterization, but no packaged waste.*	from: 4.2.3, 4.2.3.3 to: 4.2.1, 4.2.1.4
Reusable Facilities *is a constituent of:* • Transferrable Resources from Tank Waste Remediation	*Excess facilities, excluding tanks, that have reached their useful life and have no currently identifiable or planned programmatic use in TWRS. These facilities may be used at the site-level to support SST and DST closure activities.*	from: 4.2.3 to: (5), (5.1), (5.2), (5.3)
Reusable Materials for MTW	*Equipment, chemicals (including water), or facilities that have fulfilled their original purpose and are now available and appropriate for use by Manage Waste Tank function.*	from: 4.2.3, 4.2.3.6 to: 4.2.1
Reusable Materials for PW	*Equipment, chemicals (including water), or facilities that have fulfilled their original purpose and are now available and appropriate for use by Process Waste function.*	from: 4.2.3, 4.2.3.6 to: 4.2.2
Reusable Materials for Site *is a constituent of:* • Transferrable Resources from Tank Waste Remediation	*Equipment, chemicals (including water), that have fulfilled their original purpose and are now available and appropriate for use by non-TWRS, site-level functions.*	from: 4.2.3, 4.2.3.6 to: (5), (5.1), (5.2), (5.3)
SW for Processing	*Secondary waste for processing consists of scrap glass (e.g., glass recovered from failed melters), and TRU tank solids scrap, with required characterization information for both. Scrap glass and TRU tank solids scrap can be fed directly back to the immobilization function.*	from: 4.2.3, 4.2.3.4 to: 4.2.2, 4.2.2.2
Solid Waste from Tank Waste Remediation	*Dispositioned solid waste includes all packaged solid waste that meets acceptance criteria of Remediate Solid Waste function. Includes hazardous, mixed and radioactive wastes, minus any scrap glass that is fed back into the IHLW process.*	from: 4.2, 4.2.3 to: 4.3, 4.3.2, 4.3.2.2

Table 1-48. Immobilize & Dispose LLW.

[4.2.3.1] Immobilize & Dispose LLW

Receive pretreated LLW from the Process Waste (PW) function (via storage in Manage Tank Waste (MTW)), treat LLW, and dispose LLW onsite. This function includes; receipt of the waste from PW, treatment of the waste by an immobilization process, disposal of the immobilized waste, and closure of the disposal site.

This function begins when the LLW is received from PW. Treatment will continue until all waste shipped from PW is treated and the disposal site is closed.

SYNTHESIS DEFINITION

Dispose of the LLW fraction of tank waste in containerized glass or glass cullet in a retrievable form.

Product	*Description*	*Source/Destination Function(s)*
Closed ILLW Sites *is a constituent of:* • Waste/Materials Dispositioned On-Site	*Solidified or otherwise immobilized and stabilized LLW resulting from high level tank waste processing, in engineered disposal structures and their sites that have been closed with appropriate long-term monitoring instrumentation in place.*	from: 4.2, 4.2.3, 4.2.3.1 to: 200 Area Plateau
Excess Facilities from ILLW	*ILLW excess facilities that have reached their useful life and have no currently identifiable or planned programmatic use.*	from: 4.2.3.1 to: 4.2.3.5
Gaseous Waste from ILLW	*Gaseous effluents from melter off gas, process vessel offgas, and facility offgas are treated to meet emission requirements and released.*	from: 4.2.3.1 to: 4.2.3.2
Liquid Effluent from ILLW	*Liquid waste generated from functions associated with immobilization and disposition of low-level tank waste.*	from: 4.2.3.1 to: 4.2.3.3
SW from Immobilize & Dispose LLW *is a constituent of:* • Liquid SW for Storage	*This material will consist of processing wastes, typically fluids, and out of specification immobilized and/or recovered immobilized tank wastes requiring additional treatment as a result of pending "leave or retrieve for additional treatment" decisions. This material will consist of any treated waste not meeting acceptance requirements and any material retrieved for further processing.*	from: 4.2.3.1 to: (4.2.1), (4.2.1.4)
Solid Waste from ILLW	*Solid waste generated from functions associated with immobilization and disposition of low-level tank waste.*	from: 4.2.3.1 to: 4.2.3.4

Table 1-49. Disposition Gaseous Effluent (DGE).

[4.2.3.2] Disposition Gaseous Effluent (DGE) Filter, scrub, and exhaust treated gaseous effluent generated from facilities, tanks and processes. Exhaust effluent stream(s) to an external system. This effort is ongoing and will terminate with the last process activity.		
SYNTHESIS DEFINITION Treat and dispose of gaseous effluents as appropriate.		
Product	***Description***	***Source/Destination Function(s)***
Dispositioned Gaseous Effluent *is a constituent of:* • Released Gaseous Effluents	*Conditioned gases appropriate for discharge directly to the environment from process and containment buildings.*	from: 4.2, 4.2.3, 4.2.3.2 to: (Environment)
Liquid Effluent from DGE	*Includes all liquid streams generated from condensation, scrubbing, and filtration of off-gas streams.*	from: 4.2.3.2 to: 4.2.3.3
Solid Waste from DGE	*Solid waste from DGE includes wastes generated from excess filters, particulates, etc. generated from off-gas stream treatment and disposition.*	from: 4.2.3.2 to: 4.2.3.4

Table 1-50. Disposition Liquid Effluent (DLE).

[4.2.3.3] Disposition Liquid Effluent (DLE) Collect liquid effluent and store for processing or treat before discharging to the environment or to an external containment system. This effort is ongoing and will terminate with the last process activity.		
SYNTHESIS DEFINITION Treat liquid (aqueous) effluents to the point where discharge to function 4.5 process is acceptable.		
Product	***Description***	***Source/Destination Function(s)***
Dispositioned Liquid Effluent *is a constituent of:* • Aqueous Waste from Tank Waste Remediation	*Treated liquid effluent from the DLE function to the Manage Aqueous Waste function. May contain environmentally releasable effluent.*	from: 4.2.3, 4.2.3.3 to: (4.5), (4.5.3)
Gaseous Effluent from DLE	*Vessel vent and HVAC flows from evaporator process condensate treatment facility type activities.*	from: 4.2.3.3 to: 4.2.3.2
Liquid SW for Storage *aggregates:* • SW from Immobilize & Dispose LLW	*Liquid secondary waste for storage, with required characterization information, produced in the MSGW & EF (4.2.3) function. This includes cleaning waste, lab waste from sample characterization, but no packaged waste.*	from: 4.2.3, 4.2.3.3 to: 4.2.1, 4.2.1.4
Reusable Liquid from DLE	*Process condensates and environmentally dischargeable liquids suitable for reuse.*	from: 4.2.3.3 to: 4.2.3.6
Solid Waste from DLE	*Solid wastes generated by condensate treatment processes. This stream may include ion exchange resins, precipitated sludges, and ammonium sulfate salts from waste neutralization. Failed process equipment and expended support equipment (i.e., HEPA filters) will be included in this stream.*	from: 4.2.3.3 to: 4.2.3.4

Table 1-51. Disposition Solid Waste (DSW). (2 sheets)

[4.2.3.4] Disposition Solid Waste (DSW)

Prepare solid waste generated as a result of remediating tank waste for disposition. This includes segregating, characterizing, packaging, and transferring system generated solid waste. Solid waste includes: High-level and low-level radioactive waste, mixed low-level and dangerous waste, transuranic waste, mixed transuranic and dangerous waste, dangerous waste, and nonradioactive nondangerous solid waste.

Disposition solid waste is ongoing and will continue as long as solid waste is generated by TWRS.

SYNTHESIS DEFINITION

Treat solid wastes as necessary to be acceptable to function 4.3.

Product	*Description*	*Source/Destination Function(s)*
Cleaning Waste	*Liquids evolved from management of solid waste. These liquids are primarily expected from waste decontamination, but may also be generated from other material management activities (e.g., package or shipping cask decontamination, material stabilization).*	from: 4.2.3.4 to: 4.2.3.3
Dispositioned Solid Waste (TWRS) *is a constituent of:* • Waste/Materials Dispositioned Off-Site • Waste/Materials Dispositioned On-Site	*Dispositioned solid waste includes all packaged and shipped waste that meets the disposal criteria for the appropriate disposal destination, including sanitary, hazardous, mixed, and radioactive wastes. This includes failed melter packages as high-level solid waste to a geologic repository, minus any scrap glass that can be fed back into the IHLW process via output interface 4.2.3.4 O7, Scrap Glass.*	from: 4.2, 4.2.3, 4.2.3.4 to: (Offsite Disposal Site), (On-Site Disposal System)
Gaseous Effluent from DSW	*Gases evolving from management of solid waste. These gases are primarily expected from solid waste management enclosures but may also be generated from material management activities or radiolysis.*	from: 4.2.3.4 to: 4.2.3.2
Low Level SW	*Secondary LLW for immobilization. This includes LLW glass material separated from container decontamination waste, off-standard glass requiring rework, glass spillage, glass from radioactive melter tests, and glass removed from failed melters. Scrap glass is fed directly back into the Immobilize & Dispose LLW function.*	from: 4.2.3.4 to: 4.2.3.1
Reusable Solids from DSW	*Solid materials segregated from solid waste that can be beneficially reused or recycled.*	from: 4.2.3.4 to: 4.2.3.6

Table 1-51. Disposition Solid Waste (DSW). (2 sheets)

SW for Processing	*Secondary waste for processing consists of scrap glass (e.g., glass recovered from failed melters), and TRU tank solids scrap, with required characterization information for both. Scrap glass and TRU tank solids scrap can be fed directly back to the immobilization function.*	from: 4.2.3, 4.2.3.4 to: 4.2.2, 4.2.2.2

Table 1-52. Disposition Excess Facilities (DEF).

[4.2.3.5] Disposition Excess Facilities (DEF)

Evaluate (for possible reuse or deactivation), empty, decontaminate, and dispose of excess facilities accordingly. If reuse within TWRS is not an option, then the excess facility will be prepared for transfer to site-level Deactivate Facilities function (4.1) (D&D) for closure, after the following activities: Identification and/or removal of chemical inventories, decontamination or stabilization of work areas, shut down non-essential support systems, disconnection of utilities, and isolation of tanks (where applicable). Excess facilities are those structures used in the storage, treatment, or processing of tank waste which have no currently identifiable programmatic uses. Excess facilities include: DSTs, SSTs, miscellaneous tanks, transfer lines, pretreatment structures, LLW/HLW facilities and any other facilities that support the TWRS process.

Processing through DEF is ongoing, specifically clean-up activities on existing, inactive excess facilities (e.g., 244AR Vault, 244CR Vault, 242S Evaporator) awaiting transfer to the site level Deactivate Facilities (4.1) function. This process ends when the facility meets the acceptance criteria for site-level reuse or transfer for closure.

SYNTHESIS DEFINITION

Transfer excess tank waste facilities to function 4.1.

Product	*Description*	*Source/Destination Function(s)*
Closure-Ready DSTs	*DSTs that have been emptied of waste, decontaminated, isolated, and are ready to be transferred to the site-level Deactivate Facilities function (4.1) (D&D) for closure. This does not preclude external, site reuse.*	from: 4.2, 4.2.3.5 to: 4.1
Closure-Ready SSTs	*SSTs that have been emptied of waste, decontaminated, isolated, and are ready for transfer to the sitewide Deactivate Facilities function (4.1) (D&D) for closure.*	from: 4.2, 4.2.3.5 to: 4.1
Excess Tank Waste Facilities	*TWRS (non-tank) facilities that have been emptied, decontaminated, disabled, except for essential surveilance and monitoring systems and are ready for transfer to the site-level Deactivate Facilities (4.1) function.*	from: 4.2, 4.2.3, 4.2.3.5 to: 4.1
Gaseous Effluent from DEF	*Gaseous effluent generated from the process of removing hazardous and radioactive inventories and decontaminating excess facilities.*	from: 4.2.3.5 to: 4.2.3.2
Liquid Effluent from DEF	*Residues, cleaning wastes, and other liquid or slurry wastes originating from the removal of chemical inventories and decontamination of excess facilities.*	from: 4.2.3.5 to: 4.2.3.3
Solid Waste from DEF	*Solid waste generated from removal of hazardous and radioactive inventories and decontamination of excess facilities.*	from: 4.2.3.5 to: 4.2.3.4

Table 1-53. Disposition Reusable Materials (DRM).

[4.2.3.6] Disposition Reusable Materials (DRM)

Evaluate for reuse (before acceptance), collect, store, treat (e.g., recycled water with corrosion inhibitors), package, and transfer materials for TWRS and site-level reuse. Major types of reusable materials include water, nitrous oxide, concrete (for road aggregate), and scrap metal (e.g., iron, steel, railroad rails, salvage drums/gas cylinders, aluminum, and copper from electrical wiring).

This process is ongoing and will terminate with the last process activity.

SYNTHESIS DEFINITION

Combination of localized and centralized recycling/reuse

Product	*Description*	*Source/Destination Function(s)*
Excess Facilities from DRM	*DRM excess facilities that have reached their useful life and have no currently identifiable or planned programmatic use in the DRM function.*	from: 4.2.3.6 to: 4.2.3.5
Gaseous Effluent from DRM	*Gaseous effluent that are a byproduct from DRM treatment or interim storage such as ventilation exhaust.*	from: 4.2.3.6 to: 4.2.3.2
Liquid Effluent from DRM	*Liquid effluent that requires disposal (not reusable) and is generated as a byproduct from treatment or interim storage of DRM.*	from: 4.2.3.6 to: 4.2.3.3
Reusable Materials for MSGW & EF	*Materials that can be reused or recycled by other MSGW & EF functions.*	from: 4.2.3.6 to: 4.2.3.1, 4.2.3.5
Reusable Materials for MTW	*Equipment, chemicals (including water), or facilities that have fulfilled their original purpose and are now available and appropriate for use by Manage Waste Tank function.*	from: 4.2.3, 4.2.3.6 to: 4.2.1
Reusable Materials for PW	*Equipment, chemicals (including water), or facilities that have fulfilled their original purpose and are now available and appropriate for use by Process Waste function.*	from: 4.2.3, 4.2.3.6 to: 4.2.2
Reusable Materials for Site *is a constituent of:* • Transferrable Resources from Tank Waste Remediation	*Equipment, chemicals (including water), that have fulfilled their original purpose and are now available and appropriate for use by non-TWRS, site-level functions.*	from: 4.2.3, 4.2.3.6 to: (5), (5.1), (5.2), (5.3)
Solid Waste from DRM	*Solid waste that requires disposal (not reusable) and is generated as a byproduct from treatment or interim storage of DRM.*	from: 4.2.3.6 to: 4.2.3.4

Table 1-54. Remedy Solid Waste. (2 sheets)

[4.3] Remedy Solid Waste

The REMEDY SOLID WASTE (4.3) function is charged with disposition of buried wastes and solid waste materials generated during past missions, solid wastes generated during the cleanup mission, and solid ? of hazardous liquids.

SYNTHESIS DEFINITION

For buried/retrievably stored waste, all historical records will be evaluated to determine where wastes that might be classified as TRU are buried. Retrieve the sections of trenches containing post-1970 retrievably stored suspect TRU waste and process the retrieved wastes. Fill the disturbed trenches. Leave in place without disturbing the remainder of the trench contents. Place a RCRA cover over the trenches to prevent any dispersal of potential contamination into the groundwater.

Regarding storage, wastes requiring treatment are stored, in a regulatory compliant manner, pending availability of treatment capability. Wastes that have no currently defined treatment criteria are stored until such treatment capability exists, either on-site or off-site. Treated wastes are stored until acceptable disposal facilities become available.

Waste treatment will process the radioactive wastes (TRUM/TRU and LLMW/LLW) to meet the requirements of the disposal waste acceptance criteria. For TRU waste, the treated waste will meet the WIPP Waste Acceptance Criteria. For LLMW, the treated waste will meet concentration based standards or specific treatment based on Land Disposal Restrictions.

Hazardous waste will be contracted to an off-site commercial operation. On-site disposal is provided for all LLW and LLMW. TRU waste and hazardous waste will be disposed off-site.

Product	*Description*	*Source/Destination Function(s)*
Aqueous Waste from Solid Waste Cleanup	*Low level or low level mixed aqueous waste resulting from solid waste cleanup operations.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.5, 4.5.3
Excess Solid Waste Facilities	*Facilities that have had a mission in the Hanford Cleanup Mission. It includes excess sites for disposition (e.g. potentially contaminated retrieved trench).*	from: 4.3, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.5, 4.3.5.7 to: 4.1
Hazardous Waste *is a constituent of:* • Waste/Materials Dispositioned Off-Site	*Hazardous waste as defined by federal, state, or local laws.*	from: 4.3, 4.3.5, 4.3.5.5 to: (Offsite Disposal Site)
LLMW/LLW *is a constituent of:* • Waste/Materials Dispositioned On-Site	*Low level waste and low level mixed waste.*	from: 4.3, 4.3.5, 4.3.5.6 to: 200 Area Plateau
Processed Post-70 TRU/TRUM *is a constituent of:* • Waste/Materials Dispositioned Off-Site	*Transuranic waste and transuranic mixed waste processed after 1970 resulting from cleanup of facilities or sites.*	from: 4.3, 4.3.5, 4.3.5.5 to: WIPP
RCRA Covered Trench *is a constituent of:* • Waste/Materials Dispositioned On-Site	*Legacy TRU disposal trench with post-1970 TRU/TRUM removed and covered to RCRA requirements.*	from: 4.3, 4.3.5, 4.3.5.6 to: 200 Area Plateau

Table 1-54. Remedy Solid Waste. (2 sheets)

Tank Waste from Solid Waste Cleanup	*Tank waste materials resulting from cleanup of solid waste items containing a high level of hazardous or mixed waste.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.2, 4.2.1, 4.2.1.4
Transferrable Resources from Solid Waste *is a constituent of:* • Transferrable Resources	*Equipment or components cleaned up to acceptable levels and having a new owner identified.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.4, 4.3.4, 4.3.4.3, 4.3.5, 4.3.5.7 to: (5), (5.1), (5.2), (5.3)

Table 1-55. Maintain Solid Waste Safety And Compliance Envelope.

[4.3.1] Maintain Solid Waste Safety And Compliance Envelope

Continually assess and maintain the waste form and the facility structures and operations in a safe and compliant condition. Includes maintaining a qualified facility staff, and maintaining required safety/compliance documentation.

SYNTHESIS DEFINITION

Utilize Value Engineering and Total Quality Management techniques for continuous improvement in the Solid Waste safety and compliance envelope.

Product	*Description*	*Source/Destination Function(s)*
Aqueous Waste from Solid Waste Cleanup	*Low level or low level mixed aqueous waste resulting from solid waste cleanup operations.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.5, 4.5.3
Solid Waste Generated During Solid Waste Cleanup Operations	*Contaminated tools, equipment and materials generated as a direct result of cleanup operations; including used cleaning solvents, rags, stack filters and similar items requiring processing prior to disposal or transfer to a useful function within or outside the Cleanup Hanford mission*	from: 4.3.1, 4.3.1.2, 4.3.1.5 to: 4.3.2, 4.3.2.2
Tank Waste from Solid Waste Cleanup	*Tank waste materials resulting from cleanup of solid waste items containing a high level of hazardous or mixed waste.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.2, 4.2.1, 4.2.1.4
Transferrable Resources from Solid Waste *is a constituent of:* • Transferrable Resources	*Equipment or components cleaned up to acceptable levels and having a new owner identified.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.4, 4.3.4, 4.3.4.3, 4.3.5, 4.3.5.7 to: (5), (5.1), (5.2), (5.3)

Table 1-56. Maintain Safe And Compliant Solid Waste Operational Environment.

[4.3.1.1] Maintain Safe And Compliant Solid Waste Operational Environment

Continually assess and maintain the solid waste operational environment in a safe and compliant condition, with respect to applicable environmental requirements, DOE orders, and all other applicable codes, standards, and company procedures.

SYNTHESIS DEFINITION

Comply with all requirements, except where waivers to requirements are more cost effective without degrading the safety and compliance envelope.

Product	*Description*	*Source/Destination Function(s)*
Aqueous Waste from Solid Waste Cleanup	*Low level or low level mixed aqueous waste resulting from solid waste cleanup operations.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.5, 4.5.3
Tank Waste from Solid Waste Cleanup	*Tank waste materials resulting from cleanup of solid waste items containing a high level of hazardous or mixed waste.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.2, 4.2.1, 4.2.1.4
Transferrable Resources from Solid Waste *is a constituent of:* • Transferrable Resources	*Equipment or components cleaned up to acceptable levels and having a new owner identified.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.4, 4.3.4, 4.3.4.3, 4.3.5, 4.3.5.7 to: (5), (5.1), (5.2), (5.3)

Table 1-57. Maintain Safe And Compliant Solid Waste Systems, Equipment And Structures.

[4.3.1.2] Maintain Safe And Compliant Solid Waste Systems, Equipment And Structures

Continually assess and maintain the solid waste facility systems, equipment, and structures, and their operations in a safe condition. Maintain a qualified solid waste staff, and maintain required solid waste facility and operating documentation.

SYNTHESIS DEFINITION

Pursue DOE owned, contractor operated facilities acquired through capital projects. Use privatized facilities where appropriate and found to provide greater benefit than a DOE owned facility.

Product	*Description*	*Source/Destination Function(s)*
Aqueous Waste from Solid Waste Cleanup	*Low level or low level mixed aqueous waste resulting from solid waste cleanup operations.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.5, 4.5.3
Solid Waste Generated During Solid Waste Cleanup Operations	*Contaminated tools, equipment and materials generated as a direct result of cleanup operations; including used cleaning solvents, rags, stack filters and similar items requiring processing prior to disposal or transfer to a useful function within or outside the Cleanup Hanford mission*	from: 4.3.1, 4.3.1.2, 4.3.1.5 to: 4.3.2, 4.3.2.2
Tank Waste from Solid Waste Cleanup	*Tank waste materials resulting from cleanup of solid waste items containing a high level of hazardous or mixed waste.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.2, 4.2.1, 4.2.1.4
Transferrable Resources from Solid Waste *is a constituent of:* • Transferrable Resources	*Equipment or components cleaned up to acceptable levels and having a new owner identified.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.4, 4.3.4, 4.3.4.3, 4.3.5, 4.3.5.7 to: (5), (5.1), (5.2), (5.3)

Table 1-58. Maintain Safe And Compliant Solid Waste Documentation (SARs, OSRs, etc.).

[4.3.1.3] Maintain Safe And Compliant Solid Waste Documentation (SARs, OSRs, etc.) Maintain required solid waste facility and operating documentation related to safe and compliant operations.		
SYNTHESIS DEFINITION Use V.E. and TQM to improve the process.		
Product	***Description***	***Source/Destination Function(s)***
Transferrable Resources from Solid Waste *is a constituent of:* • Transferrable Resources	*Equipment or components cleaned up to acceptable levels and having a new owner identified.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.4, 4.3.4, 4.3.4.3, 4.3.5, 4.3.5.7 to: (5), (5.1), (5.2), (5.3)

Table 1-59. Maintain Qualified Solid Waste Staff.

[4.3.1.4] Maintain Qualified Solid Waste Staff Provide solid waste facility specific training, testing, and training records maintenance to ensure solid waste facility staff remain trained, qualified, and certified throughout the solid waste facility operation.		
SYNTHESIS DEFINITION (Products identified from higher level functions. Architecture not yet defined.)		
Product	***Description***	***Source/Destination Function(s)***
Transferrable Resources from Solid Waste *is a constituent of:* • Transferrable Resources	*Equipment or components cleaned up to acceptable levels and having a new owner identified.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.4, 4.3.4, 4.3.4.3, 4.3.5, 4.3.5.7 to: (5), (5.1), (5.2), (5.3)

Table 1-60. Assess Solid Waste Safety And Compliance State.

[4.3.1.5] Assess Solid Waste Safety And Compliance State Perform/respond to oversight assessments and perform appropriate self assessments of the solid waste facility activities to evaluate the facility and operations safety and compliance status.		
SYNTHESIS DEFINITION Use V.E. and TQM to improve the process.		
Product	***Description***	***Source/Destination Function(s)***
Solid Waste Generated During Solid Waste Cleanup Operations	*Contaminated tools, equipment and materials generated as a direct result of cleanup operations; including used cleaning solvents, rags, stack filters and similar items requiring processing prior to disposal or transfer to a useful function within or outside the Cleanup Hanford mission*	from: 4.3.1, 4.3.1.2, 4.3.1.5 to: 4.3.2, 4.3.2.2
Transferrable Resources from Solid Waste *is a constituent of:* • Transferrable Resources	*Equipment or components cleaned up to acceptable levels and having a new owner identified.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.4, 4.3.4, 4.3.4.3, 4.3.5, 4.3.5.7 to: (5), (5.1), (5.2), (5.3)

Table 1-61. Receive Solid Waste.

[4.3.2] Receive Solid Waste Retrieve legacy solid waste and receive solid waste generated during cleanup operations and solid waste from other missions.		
SYNTHESIS DEFINITION Develop standardized Waste Acceptance Criteria (WAC) [for treatment, storage, disposal as necessary] for all currently identified waste and likely future shipments of waste to the Hanford site. Address unusual situations on a case-by-case basis. Broaden the criteria, as required, to address any unexpected waste receipts.		
Product	***Description***	***Source/Destination Function(s)***
Aqueous Waste from Solid Waste Cleanup	*Low level or low level mixed aqueous waste resulting from solid waste cleanup operations.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.5, 4.5.3
Data/Samples for Characterization	*This is new waste information and samples obtained during solid waste access and removal operations and through the verification process associated with acceptance.*	from: 4.3.2, 4.3.2.1, 4.3.2.2 to: 4.3.3, 4.3.3.2
Excess Solid Waste Facilities	*Facilities that have had a mission in the Hanford Cleanup Mission. It includes excess sites for disposition (e.g. potentially contaminated retrieved trench).*	from: 4.3, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.5, 4.3.5.7 to: 4.1
Received Solid Waste *aggregates:* • Retrieved Solid Waste	*This is solid waste received from solid waste operations, cleanup operations, and other missions, including removed legacy waste, that is now ready for disposition.*	from: 4.3.2, 4.3.2.2 to: 4.3.5, 4.3.5.1, 4.3.5.3, 4.3.5.7
Retrieved Solid Waste *is a constituent of:* • Received Solid Waste	*Solid waste that has been received or retrieved and is ready for disposition.*	from: 4.3.2, 4.3.2.1 to: (4.3.5), (4.3.5.1), (4.3.5.3), (4.3.5.7)
Tank Waste from Solid Waste Cleanup	*Tank waste materials resulting from cleanup of solid waste items containing a high level of hazardous or mixed waste.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.2, 4.2.1, 4.2.1.4
Transferrable Resources from Solid Waste *is a constituent of:* • Transferrable Resources	*Equipment or components cleaned up to acceptable levels and having a new owner identified.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.4, 4.3.4, 4.3.4.3, 4.3.5, 4.3.5.7 to: (5), (5.1), (5.2), (5.3)

Table 1-62. Retrieve Existing Solid Waste.

[4.3.2.1] Retrieve Existing Solid Waste

Retrieve legacy solid waste; includes retrieval planning and solid waste access and removal, obtains waste characterization samples, generates waste information, establishes retrieval capability requirements, and forecasts future retrieval operations.

SYNTHESIS DEFINITION

Retrieve waste from trenches and buildings which meets the timetable for treatment and disposal by existing and future treatment facilities. Emphasis is on minimizing any future degradation of the waste package container and minimizing any future release of contaminants to the environment.

Product	*Description*	*Source/Destination Function(s)*
Aqueous Waste from Solid Waste Cleanup	*Low level or low level mixed aqueous waste resulting from solid waste cleanup operations.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.5, 4.5.3
Data/Samples for Characterization	*This is new waste information and samples obtained during solid waste access and removal operations and through the verification process associated with acceptance.*	from: 4.3.2, 4.3.2.1, 4.3.2.2 to: 4.3.3, 4.3.3.2
Excess Solid Waste Facilities	*Facilities that have had a mission in the Hanford Cleanup Mission. It includes excess sites for disposition (e.g. potentially contaminated retrieved trench).*	from: 4.3, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.5, 4.3.5.7 to: 4.1
Retrieved Solid Waste *is a constituent of:* • Received Solid Waste	*Solid waste that has been received or retrieved and is ready for disposition.*	from: 4.3.2, 4.3.2.1 to: (4.3.5), (4.3.5.1), (4.3.5.3), (4.3.5.7)
Tank Waste from Solid Waste Cleanup	*Tank waste materials resulting from cleanup of solid waste items containing a high level of hazardous or mixed waste.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.2, 4.2.1, 4.2.1.4
Transferrable Resources from Solid Waste *is a constituent of:* • Transferrable Resources	*Equipment or components cleaned up to acceptable levels and having a new owner identified.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.4, 4.3.4, 4.3.4.3, 4.3.5, 4.3.5.7 to: (5), (5.1), (5.2), (5.3)

Table 1-63. Receive New Solid Waste.

[4.3.2.2] Receive New Solid Waste

Receives solid waste generated during Hanford Cleanup mission operations and from other missions; includes solid waste receipt planning, characterization information verification for acceptance, establishes receipt capability requirements, and forecasts future receipt operations.

SYNTHESIS DEFINITION

Continue to accept wastes from on-site and off-site generators in accordance with national policy guidelines. Pursue the option of providing national radioactive materials disposal services to both government and non-government entities.

Product	*Description*	*Source/Destination Function(s)*
Aqueous Waste from Solid Waste Cleanup	*Low level or low level mixed aqueous waste resulting from solid waste cleanup operations.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.5, 4.5.3
Data/Samples for Characterization	*This is new waste information and samples obtained during solid waste access and removal operations and through the verification process associated with acceptance.*	from: 4.3.2, 4.3.2.1, 4.3.2.2 to: 4.3.3, 4.3.3.2
Excess Solid Waste Facilities	*Facilities that have had a mission in the Hanford Cleanup Mission. It includes excess sites for disposition (e.g. potentially contaminated retrieved trench).*	from: 4.3, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.5, 4.3.5.7 to: 4.1
Received Solid Waste *aggregates:* • Retrieved Solid Waste	*This is solid waste received from solid waste operations, cleanup operations, and other missions, including removed legacy waste, that is now ready for disposition.*	from: 4.3.2, 4.3.2.2 to: 4.3.5, 4.3.5.1, 4.3.5.3, 4.3.5.7
Tank Waste from Solid Waste Cleanup	*Tank waste materials resulting from cleanup of solid waste items containing a high level of hazardous or mixed waste.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.2, 4.2.1, 4.2.1.4
Transferrable Resources from Solid Waste *is a constituent of:* • Transferrable Resources	*Equipment or components cleaned up to acceptable levels and having a new owner identified.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.4, 4.3.4, 4.3.4.3, 4.3.5, 4.3.5.7 to: (5), (5.1), (5.2), (5.3)

Table 1-64. Characterize Solid Waste.

[4.3.3] Characterize Solid Waste

Identify, inventory, and characterize the waste by reviewing the process operations (current and historical), by reviewing new waste information and by sampling and analyzing the waste inventory. Assess the current condition of the waste. Archive the results of these investigations.

SYNTHESIS DEFINITION

For Stored and Newly Generated Waste:

The solid waste must be characterized, to varying degrees depending on the operations in question, for both storage, treatment and for disposal. The waste generators must adequately characterize the incoming wastes to permit storage under Hanford site permits and for planning of treatment, as well as to prepare the necessary shipping manifest. Treatment facilities may need to augment the incoming characterization date to refine treatment plans, and they will be required to characterize the waste to the degree required for preparing shipping manifests and to demonstrate treatment to disposal waste acceptance criteria standards. Modern but well proven data management methods should be used for the characterization system.

For Retrievably Stored Waste:

Maximize use of non-intrusive characterization which meets regulations and provides just sufficient data for TSD. Close coupled analytical processes should be used whenever non intrusive methods are not available. Modern but well proven data management methods should be used for the characterization system. Characterization at retrieval will be adequate for storage prior to treatment; to some degree, characterization for treatment will have to occur as part of the actual processing operation.

Product	*Description*	*Source/Destination Function(s)*
Aqueous Waste from Solid Waste Cleanup	*Low level or low level mixed aqueous waste resulting from solid waste cleanup operations.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.5, 4.5.3
Excess Solid Waste Samples	*These are excess solid waste samples that will be received as solid waste requiring disposition.*	from: 4.3.3, 4.3.3.2 to: 4.3.2, 4.3.2.2
Tank Waste from Solid Waste Cleanup	*Tank waste materials resulting from cleanup of solid waste items containing a high level of hazardous or mixed waste.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.2, 4.2.1, 4.2.1.4
Transferrable Resources from Solid Waste *is a constituent of:* • Transferrable Resources	*Equipment or components cleaned up to acceptable levels and having a new owner identified.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.4, 4.3.4, 4.3.4.3, 4.3.5, 4.3.5.7 to: (5), (5.1), (5.2), (5.3)

Table 1-65. Acquire Solid Waste Process Knowledge.

[4.3.3.1] Acquire Solid Waste Process Knowledge Review the solid waste processing records, process documentation, and submitted documentation to acquire knowledge about the solid waste generation process. Conduct interviews with solid waste generators as needed to obtain such knowledge and perform a safety review of the solid waste. Provide this process knowledge to enable the solid waste characterization assessment.		
SYNTHESIS DEFINITION Acquire knowledge about how historical wastes were generated and current wastes are generated including process information.		
Product	***Description***	***Source/Destination Function(s)***
Transferrable Resources from Solid Waste *is a constituent of:* • Transferrable Resources	*Equipment or components cleaned up to acceptable levels and having a new owner identified.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.4, 4.3.4, 4.3.4.3, 4.3.5, 4.3.5.7 to: (5), (5.1), (5.2), (5.3)

Table 1-66. Analyze Solid Waste Inventory.

[4.3.3.2] Analyze Solid Waste Inventory

Receive the solid waste samples and perform analysis thereof to obtain required characterization data. Provide this analysis information to enable the solid waste characterization assessment. Transfer the solid waste samples and accompanying characterization data to solid waste archives. Send any excess solid waste samples on to the Receive Solid Waste function to facilitate disposition.

SYNTHESIS DEFINITION

Analyze waste inventory to acquire necessary characterization information.

Product	*Description*	*Source/Destination Function(s)*
Aqueous Waste from Solid Waste Cleanup	*Low level or low level mixed aqueous waste resulting from solid waste cleanup operations.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.5, 4.5.3
Excess Solid Waste Samples	*These are excess solid waste samples that will be received as solid waste requiring disposition.*	from: 4.3.3, 4.3.3.2 to: 4.3.2, 4.3.2.2
Solid Waste Samples	*Solid waste samples that were used to analyze the waste inventory that now require archiving.*	from: 4.3.3.2 to: 4.3.3.3
Tank Waste from Solid Waste Cleanup	*Tank waste materials resulting from cleanup of solid waste items containing a high level of hazardous or mixed waste.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.2, 4.2.1, 4.2.1.4
Transferrable Resources from Solid Waste *is a constituent of:* • Transferrable Resources	*Equipment or components cleaned up to acceptable levels and having a new owner identified.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.4, 4.3.4, 4.3.4.3, 4.3.5, 4.3.5.7 to: (5), (5.1), (5.2), (5.3)

Table 1-67. Archive Solid Waste Samples/Characterization Data.

[4.3.3.3] Archive Solid Waste Samples/Characterization Data Provide archival storage and retrieval operations for the analyzed solid waste samples and the accompanying characterization data.		
SYNTHESIS DEFINITION Provide system for archival of samples and characterization data.		
Product	***Description***	***Source/Destination Function(s)***
Solid Waste Archive Samples	*Solid waste samples retrieved from archival storage for further analysis.*	from: 4.3.3.3 to: 4.3.3.2

Table 1-68. Assess Solid Waste Characterization Information.

[4.3.3.4] Assess Solid Waste Characterization Information

Evaluate the solid waste characterization information, consisting of generator request information, process knowledge information, and waste sample characterization data, against the solid waste disposition requirements and provide validation of meeting the disposition requirements. Determine any additional solid waste process knowledge needs to support disposition.

SYNTHESIS DEFINITION

Provide capability to assess adequacy of characterization information.

Product	*Description*	*Source/Destination Function(s)*
Transferrable Resources from Solid Waste *is a constituent of:* • Transferrable Resources	*Equipment or components cleaned up to acceptable levels and having a new owner identified.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.4, 4.3.4, 4.3.4.3, 4.3.5, 4.3.5.7 to: (5), (5.1), (5.2), (5.3)

Table 1-69. Determine Solid Waste Disposition Requirements.

[4.3.4] Determine Solid Waste Disposition Requirements Compile and sort imposed requirements, define requirements that result from proposed solutions and required capabilities, and assess constraints under which the function must operate.		
SYNTHESIS DEFINITION (Products identified from higher level functions. Architecture not yet defined.)		
Product	***Description***	***Source/Destination Function(s)***
Transferrable Resources from Solid Waste *is a constituent of:* • Transferrable Resources	*Equipment or components cleaned up to acceptable levels and having a new owner identified.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.4, 4.3.4, 4.3.4.3, 4.3.5, 4.3.5.7 to: (5), (5.1), (5.2), (5.3)

Table 1-70. Compile Imposed Solid Waste Requirements.

[4.3.4.1] Compile Imposed Solid Waste Requirements Collect state, federal, DOE and any other regulatory documents which pertain to transport, handling, packaging and disposition of solid waste.		
SYNTHESIS DEFINITION Determine all relevant and applicable requirements.		
Product	***Description***	***Source/Destination Function(s)***

(Only physical products addressed in 4.0)

Table 1-71. Evaluate Solid Waste Requirements For Disposition.

[4.3.4.2] Evaluate Solid Waste Requirements For Disposition Review and evaluate list of solid waste disposition requirements to verify applicability and completeness for disposition categories.		
SYNTHESIS DEFINITION Find overlapping and inconsistent requirements. Reconcile differences.		
Product	***Description***	***Source/Destination Function(s)***

(Only physical products addressed in 4.0)

Table 1-72. Prepare Solid Waste Disposition Specifications.

[4.3.4.3] Prepare Solid Waste Disposition Specifications Generate specifications for solid waste operations includingtreatment, packaging, certification, storage, shipping, disposition, and archiving samples and records.		
SYNTHESIS DEFINITION Specify disposition requirements based on specific waste characteristics.		
Product	***Description***	***Source/Destination Function(s)***
Transferrable Resources from Solid Waste *is a constituent of:* • Transferrable Resources	*Equipment or components cleaned up to acceptable levels and having a new owner identified.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.4, 4.3.4, 4.3.4.3, 4.3.5, 4.3.5.7 to: (5), (5.1), (5.2), (5.3)

Table 1-73. Disposition Solid Waste.

[4.3.5] Disposition Solid Waste

Package and certify the solid waste, store or ship it as needed, treat and/or immobilize it, and accomplish final disposition.

SYNTHESIS DEFINITION

Use existing facilities where activities can be conducted safely and cost-effectively. Build new facilities at Hanford as necessary to meet the disposition requirements.

Product	*Description*	*Source/Destination Function(s)*
Aqueous Waste from Solid Waste Cleanup	*Low level or low level mixed aqueous waste resulting from solid waste cleanup operations.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.5, 4.5.3
Excess Solid Waste Facilities	*Facilities that have had a mission in the Hanford Cleanup Mission. It includes excess sites for disposition (e.g. potentially contaminated retrieved trench).*	from: 4.3, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.5, 4.3.5.7 to: 4.1
Hazardous Waste *is a constituent of:* • Waste/Materials Dispositioned Off-Site	*Hazardous waste as defined by federal, state, or local laws.*	from: 4.3, 4.3.5, 4.3.5.5 to: (Offsite Disposal Site)
LLMW/LLW *is a constituent of:* • Waste/Materials Dispositioned On-Site	*Low level waste and low level mixed waste.*	from: 4.3, 4.3.5, 4.3.5.6 to: 200 Area Plateau
Processed Post-70 TRU/TRUM *is a constituent of:* • Waste/Materials Dispositioned Off-Site	*Transuranic waste and transuranic mixed waste processed after 1970 resulting from cleanup of facilities or sites.*	from: 4.3, 4.3.5, 4.3.5.5 to: WIPP
RCRA Covered Trench *is a constituent of:* • Waste/Materials Dispositioned On-Site	*Legacy TRU disposal trench with post-1970 TRU/TRUM removed and covered to RCRA requirements.*	from: 4.3, 4.3.5, 4.3.5.6 to: 200 Area Plateau
Samples of Waste Requiring Additional Characterization	*Solid waste that needs additional characterization data before final disposition can be made.*	from: 4.3.5, 4.3.5.3 to: 4.3.3, 4.3.3.2
Tank Waste from Solid Waste Cleanup	*Tank waste materials resulting from cleanup of solid waste items containing a high level of hazardous or mixed waste.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.2, 4.2.1, 4.2.1.4
Transferrable Resources from Solid Waste *is a constituent of:* • Transferrable Resources	*Equipment or components cleaned up to acceptable levels and having a new owner identified.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.4, 4.3.4, 4.3.4.3, 4.3.5, 4.3.5.7 to: (5), (5.1), (5.2), (5.3)

Table 1-74. Treat Solid Waste.

[4.3.5.1] Treat Solid Waste

Provide treatment of solid waste to neutralize, immobilize, and stabilize it for storage and final disposition.

SYNTHESIS DEFINITION

Treat solid waste as needed to meet minimum standards for disposal site waste acceptance criteria. Develop adequate treatment approaches and submit for regulatory approval. Minimize volume when appropriate.

Product	*Description*	*Source/Destination Function(s)*
Aqueous Waste from Solid Waste Cleanup	*Low level or low level mixed aqueous waste resulting from solid waste cleanup operations.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.5, 4.5.3
Quality Assurance Solid Waste Samples	*This is solid waste treatment process quality samples used to certify that the treated waste product meets the solid waste disposition requirements.*	from: 4.3.5.1, 4.3.5.2 to: 4.3.5.3
Tank Waste from Solid Waste Cleanup	*Tank waste materials resulting from cleanup of solid waste items containing a high level of hazardous or mixed waste.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.2, 4.2.1, 4.2.1.4
Treated Solid Waste	*This is solid waste that has been treated so that it meets the disposition requirements and is ready for packaging.*	from: 4.3.5.1 to: 4.3.5.2

Table 1-75. Package Solid Waste.

[4.3.5.2] Package Solid Waste

Containerize the treated solid waste in a container suitable for the waste type. Provide solid waste packaging documentation including packaging certifications and solid waste feedstock traceability. Provide appropriate labeling and inspection of the containers of solid waste.

SYNTHESIS DEFINITION

Package solid waste as needed to meet minimum standards for transportation, interim storage, and final disposal. Use standard waste packages to the maximum extent possible.

Product	*Description*	*Source/Destination Function(s)*
Aqueous Waste from Solid Waste Cleanup	*Low level or low level mixed aqueous waste resulting from solid waste cleanup operations.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.5, 4.5.3
Packaged Solid Waste	*This is solid waste that meets the certification requirements that allow on-site disposition.*	from: 4.3.5.2 to: 4.3.5.4
Quality Assurance Solid Waste Samples	*This is solid waste treatment process quality samples used to certify that the treated waste product meets the solid waste disposition requirements.*	from: 4.3.5.1, 4.3.5.2 to: 4.3.5.3
Tank Waste from Solid Waste Cleanup	*Tank waste materials resulting from cleanup of solid waste items containing a high level of hazardous or mixed waste.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.2, 4.2.1, 4.2.1.4

[4.3.5.3] Certify Solid Waste

Certify that the solid waste was treated according to the disposition requirements and that the documentation is in order to allow release of the solid waste package for storage and disposition. This function will also send samples back to the characterization function if needed.

SYNTHESIS DEFINITION

Certify solid waste as needed to meet minimum standards. Seek selected changes in the regulations to more properly address the LLW, LLMW and TRUM characterization and certification needs.

Product	*Description*	*Source/Destination Function(s)*
Aqueous Waste from Solid Waste Cleanup	*Low level or low level mixed aqueous waste resulting from solid waste cleanup operations.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.5, 4.5.3
Certified Solid Waste Data and Samples	*This is data and samples that were part of the solid waste certification process that require archival storage.*	from: 4.3.5.3 to: 4.3.5.8
Samples of Waste Requiring Additional Characterization	*Solid waste that needs additional characterization data before final disposition can be made.*	from: 4.3.5, 4.3.5.3 to: 4.3.3, 4.3.3.2
Tank Waste from Solid Waste Cleanup	*Tank waste materials resulting from cleanup of solid waste items containing a high level of hazardous or mixed waste.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.2, 4.2.1, 4.2.1.4

Table 1-76. Certify Solid Waste.

Table 1-77. Store Solid Waste.

[4.3.5.4] Store Solid Waste Store the solid waste before shipment to the disposal site.		
SYNTHESIS DEFINITION Store solid waste as needed to meet minimum standards. Develop and advance improved storage regulations.		
Product	***Description***	***Source/Destination Function(s)***
Aqueous Waste from Solid Waste Cleanup	*Low level or low level mixed aqueous waste resulting from solid waste cleanup operations.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.5, 4.5.3
Off-site Certified Solid Waste	*This is solid waste that meets the certification requirements that allow off-site disposition.*	from: 4.3.5.4 to: 4.3.5.5
On-site Certified Solid Waste	*This is solid waste that meets the certification requirements that allow on-site disposition.*	from: 4.3.5.4 to: 4.3.5.6
Tank Waste from Solid Waste Cleanup	*Tank waste materials resulting from cleanup of solid waste items containing a high level of hazardous or mixed waste.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.2, 4.3.5, 4.3.5.1, 4.3.5.2, 4.3.5.3, 4.3.5.4 to: 4.2, 4.2.1, 4.2.1.4

[4.3.5.5] Ship Solid Waste

Receive the certified solid waste package and prepare the necessary shipment requests and documentation. Coordinate the solid waste package shipment with shippers and receivers to verify that the final waste disposition was accomplished. Document the final solid waste disposition status.

SYNTHESIS DEFINITION

Ship solid waste as needed meeting minimum standards.

Product	*Description*	*Source/Destination Function(s)*
Hazardous Waste *is a constituent of:* • Waste/Materials Dispositioned Off-Site	*Hazardous waste as defined by federal, state, or local laws.*	from: 4.3, 4.3.5, 4.3.5.5 to: (Offsite Disposal Site)
Processed Post-70 TRU/TRUM *is a constituent of:* • Waste/Materials Dispositioned Off-Site	*Transuranic waste and transuranic mixed waste processed after 1970 resulting from cleanup of facilities or sites.*	from: 4.3, 4.3.5, 4.3.5.5 to: WIPP

Table 1-78. Ship Solid Waste.

[4.3.5.6] Dispose Solid Waste		
Schedule the solid waste package disposal and prepare the waste transport package and disposal documentation. Provide final inspection of the solid waste package load and place in disposal site. Close the disposal site in regulatory compliance and provide institutional controls and closure security to maintain the disposal site security and integrity.		
SYNTHESIS DEFINITION Dispose of solid waste meeting minimum regulatory standards.		
Product	***Description***	***Source/Destination Function(s)***
LLMW/LLW *is a constituent of:* • Waste/Materials Dispositioned On-Site	*Low level waste and low level mixed waste.*	from: 4.3, 4.3.5, 4.3.5.6 to: 200 Area Plateau
RCRA Covered Trench *is a constituent of:* • Waste/Materials Dispositioned On-Site	*Legacy TRU disposal trench with post-1970 TRU/TRUM removed and covered to RCRA requirements.*	from: 4.3, 4.3.5, 4.3.5.6 to: 200 Area Plateau

Table 1-79. Dispose Solid Waste.

Table 1-80. Assess Solid Waste TSD Capability Needs And Disposal Resources.

[4.3.5.7] Assess Solid Waste TSD Capability Needs And Disposal Resources Assess the solid waste treatment, storage, and disposal (TSD) capability needs and resources based on required versus design throughput and capacities.		
SYNTHESIS DEFINITION Provide capability to assess adequacy of treatment, storage, disposal capability.		
Product	***Description***	***Source/Destination Function(s)***
Excess Solid Waste Facilities	*Facilities that have had a mission in the Hanford Cleanup Mission. It includes excess sites for disposition (e.g. potentially contaminated retrieved trench).*	from: 4.3, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.5, 4.3.5.7 to: 4.1
Transferrable Resources from Solid Waste *is a constituent of:* • Transferrable Resources	*Equipment or components cleaned up to acceptable levels and having a new owner identified.*	from: 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.4, 4.3.4, 4.3.4.3, 4.3.5, 4.3.5.7 to: (5), (5.1), (5.2), (5.3)

Table 1-81. Archive Solid Waste Process Samples and Records.

[4.3.5.8] Archive Solid Waste Process Samples and Records Provide archival storage and retrieval operations for the analyzed solid waste process samples and the accompanying analysis data.		
SYNTHESIS DEFINITION Record solid waste disposition meeting minimum standards.		
Product	***Description***	***Source/Destination Function(s)***
Certified Solid Waste Archive Data and Samples	*This is archive data and samples that were part of the solid waste certification process that were requested to support further certification work.*	from: 4.3.5.8 to: 4.3.5.3

Table 1-82. Remedy/Restore Sites, Facilities, & Groundwater. (2 sheets)

[4.4] Remedy/Restore Sites, Facilities, & Groundwater

The REMEDY/RESTORE SITES, FACILITIES, AND GROUND WATER (4.4) function restores sites, deactivated facilities, ground water, and related items to an acceptable state. This function includes restoration of chemically contaminated lands, and removal or disposition of buildings, fission reactors, chemical processing plants, infrastructure, etc. This function includes new as well as legacy items.

SYNTHESIS DEFINITION

Restore sites, deactivated facilities, ground water, and related items to an acceptable state. Activities include restoration of chemically contaminated lands, and removal or disposition of buildings, fission reactors, chemical processing plants, infrastructure, and utilities, and removal by 1, 4, 5 to the 200 area disposal site (ERDF).

Product	*Description*	*Source/Destination Function(s)*
Aqueous Waste from Remedy/Restore *aggregates:* • Contaminated Waste from Groundwater Treatment • Liquid Material	*Low level or low level mixed aqueous waste needing treatment.*	from: 4.4, 4.4.4 to: 4.5, 4.5.3
Closed Waste Disposal Facility *is a constituent of:* • Waste/Materials Dispositioned On-Site *aggregates:* • Reactors	*A waste disposal facility containing LLW and LLMW resulting from remediation and environmental restoration of Hanford sites.*	from: 4.4, 4.4.4 to: 200 Area Plateau
Excess Remedy/Restore Facilities *aggregates:* • Disposal Facility	*Remedy/Restore facilities no longer required for performance of Hanford cleanup mission functions.*	from: 4.4, 4.4.2, 4.4.4 to: 4.1
Released Liquid Effluents from R&R *is a constituent of:* • Released Liquid Effluents	*Liquid effluents resulting from remedy and restore activities released to the environment or into the site aquifer.*	from: 4.4, 4.4.5 to: (Environment)
Solid Waste from Remedy/Restore *aggregates:* • TRU Waste Material	*Solid waste resulting from functions associated with site remediation and restoration.*	from: 4.4, 4.4.4 to: 4.3, 4.3.2, 4.3.2.2
Tank Waste from Remedy/Restore *aggregates:* • HLW Material	*Tank waste materials resulting from remediation and restoration of sites containing a high level of hazardous or mixed waste.*	from: 4.4, 4.4.4 to: 4.2, 4.2.1, 4.2.1.4

Table 1-82. Remedy/Restore Sites, Facilities, & Groundwater. (2 sheets)

Transferrable Resources from Remedy/Restore *is a constituent of:* • Transferrable Resources *aggregates:* • Deactivated facilities removed • RA area sites cleaned up • Remedied Aquifer	*Equipment, components, or materials resulting from site remediation and restoration cleaned up to acceptable levels and having a new owner identified.*	from: 4.4 to: (5), (5.1), (5.2), (5.3)

Table 1-83. Implement ER Capabilities and Support.

[4.4.1] Implement ER Capabilities and Support		
Support functions will be provided at each site (i.e. 100 area & disposal facility) and all resources, plans, and procedures will be provided.		
SYNTHESIS DEFINITION		
Support functions will be provided at each site (i.e., 100 Area & Disposal Facility) and all resources, plans, and procedures will be provided.		
Product	***Description***	***Source/Destination Function(s)***

(Only physical products addressed in 4.0)

Table 1-84. Perform Remedial Action.

[4.4.2] Perform Remedial Action The Remedial Action (RA) area is cleaned up to acceptable levels for intended land use.		
SYNTHESIS DEFINITION Clean up RA area to acceptable level use criteria by gross removal of contaminants, rubble and machinery. Use truck-trailer haulage and rail transfer to the 200 area ER disposal site.		
Product	***Description***	***Source/Destination Function(s)***
Excess Remedy/Restore Facilities *aggregates:* • Disposal Facility	*Remedy/Restore facilities no longer required for performance of Hanford cleanup mission functions.*	from: 4.4, 4.4.2, 4.4.4 to: 4.1
RA area sites cleaned up *is a constituent of:* • Transferrable Resources from Remedy/Restore	*RA excavation sites that have undergone remedial action and are cleaned up to acceptable levels for intended land use.*	from: 4.4.2 to: (5), (5.1), (5.2), (5.3)
Waste material (RA)	*Contaminated material generated from excavation of RA sites.*	from: 4.4.2 to: 4.4.4

Table 1-85. Decontaminate and Decommission Surplus Facilities.

[4.4.3] Decontaminate and Decommission Surplus Facilities Contaminated facilities are decontaminated and demolished along with the deactivated surplus facilities, and sites are reclaimed for intended land use.		
SYNTHESIS DEFINITION Contaminated facilities are decontaminated and demolished along with the deactivated surplus facilities, and sites are reclaimed for intended land use. Contaminated materials and rubble are transported to the ER disposal site by truck-trailer haulage and rail.		
Product	***Description***	***Source/Destination Function(s)***
Deactivated facilities removed *is a constituent of:* • Transferrable Resources from Remedy/Restore	*Decontaminated and demolished retired surplus facilities removed.*	from: 4.4.3 to: (5), (5.1), (5.2), (5.3)
Waste material (DD)	*Decontaminated and demolished retired surplus facilities removed.*	from: 4.4.3 to: 4.4.4

Table 1-86. Treat, Store, and Dispose of Waste.

[4.4.4] Treat, Store, and Dispose of Waste

The disposition of waste materials are determined and acceptable waste materials are disposed of at the Disposal Facility.

SYNTHESIS DEFINITION

(Products identified from higher level functions. Architecture not yet defined.)

Product	*Description*	*Source/Destination Function(s)*
Aqueous Waste from Remedy/Restore *aggregates:* • Contaminated Waste from Groundwater Treatment • Liquid Material	*Low level or low level mixed aqueous waste needing treatment.*	from: 4.4, 4.4.4 to: 4.5, 4.5.3
Closed Waste Disposal Facility *is a constituent of:* • Waste/Materials Dispositioned On-Site *aggregates:* • Reactors	*A waste disposal facility containing LLW and LLMW resulting from remediation and environmental restoration of Hanford sites.*	from: 4.4, 4.4.4 to: 200 Area Plateau
Excess Remedy/Restore Facilities *aggregates:* • Disposal Facility	*Remedy/Restore facilities no longer required for performance of Hanford cleanup mission functions.*	from: 4.4, 4.4.2, 4.4.4 to: 4.1
Solid Waste from Remedy/Restore *aggregates:* • TRU Waste Material	*Solid waste resulting from functions associated with site remediation and restoration.*	from: 4.4, 4.4.4 to: 4.3, 4.3.2, 4.3.2.2
Tank Waste from Remedy/Restore *aggregates:* • HLW Material	*Tank waste materials resulting from remediation and restoration of sites containing a high level of hazardous or mixed waste.*	from: 4.4, 4.4.4 to: 4.2, 4.2.1, 4.2.1.4

Table 1-87. Perform Groundwater Remedial Action.

[4.4.5] Perform Groundwater Remedial Action Remedial actions are performed to achieve groundwater quality goals and allow future intended land use.		
SYNTHESIS DEFINITION (Products identified from higher level functions. Architecture not yet defined.)		
Product	***Description***	***Source/Destination Function(s)***
Released Liquid Effluents from R&R *is a constituent of:* • Released Liquid Effluents	*Liquid effluents resulting from remedy and restore activities released to the environment or into the site aquifer.*	from: 4.4, 4.4.5 to: (Environment)
Remediated Aquifer *is a constituent of:* • Transferrable Resources from Remedy/Restore		from: 4.4.5 to: (5), (5.1), (5.2), (5.3)

Table 1-88. Manage Aqueous Wastes.

[4.5] Manage Aqueous Wastes

Manages and treats aqueous wastes which are generated by the other functions under [4.0] and ongoing operations (PNL, sanitary wastes). Develops an Aqueous Waste Disposition Plan, transports and receives aqueous waste, treats the aqueous waste (if required), and dispositions the waste. Aqueous wastes which would result in the treatment facility operating outside of the safety and regulatory envelope will not be accepted. Trans-Uranic (TRU) wastes will not be processed and the concentration of TRU's in aqueous waste processed must be below established limits. Appropriate and required documentation must accompany all aqueous waste.

SYNTHESIS DEFINITION

Dispose of all mission related aqueous wastes by providing required process operations, laboratories. and directly related utility infrastructure. Use Aqueous recycling to minimize disposal volumes and to reduce TSD costs, current infrastructure for land disposal, river disposal where permittable, non-governmental TSD capability where possible.

Product	*Description*	*Source/Destination Function(s)*
Excess Aqueous Waste Facilities *aggregates:* • Excess Aqueous Waste Disposition Facilities • Excess Aqueous Waste Receive/Transport Facilities • Excess Aqueous Waste Treatment Facilities	*Excess receiving, treatment, storage, and disposition facilities.*	from: 4.5 to: 4.1
Landfill Wastes *is a constituent of:* • Waste/Materials Dispositioned On-Site	*Waste suitable for disposition in a landfill. Does not include solid, tank, or effluent waste.*	from: 4.5, 4.5.5 to: 200 Area Plateau
Releasable Liquid from Aqueous Waste *is a constituent of:* • Released Liquid Effluents	*Liquids cleaned to standards acceptable for release to the environment.*	from: 4.5, 4.5.5 to: (Environment)
Solid Waste from Aqueous Waste Processing	*Solid waste generated from functions associated with processing aqueous waste.*	from: 4.5, 4.5.5 to: 4.3, 4.3.2, 4.3.2.2
Tank Waste from Aqueous Waste Processing	*Tank waste materials resulting from processing of aqueous waste containing a high level of hazardous or mixed waste.*	from: 4.5, 4.5.5 to: 4.2, 4.2.1, 4.2.1.4
Transferrable Resources from Aqueous Waste *is a constituent of:* • Transferrable Resources *aggregates:* • Reusable Liquid from Aqueous Waste	*Equipment, components, or materials from aqueous waste processing cleaned up to acceptable levels and having a new owner identified.*	from: 4.5 to: (5), (5.1), (5.2), (5.3)

Table 1-89. Maintain Aqueous Waste Safety and Compliance Envelope.

[4.5.1] Maintain Aqueous Waste Safety and Compliance Envelope

Maintains the facility structure, qualified staff, safe and compliant equipment, documentation and provides assessment of safety and compliance states. Provides all necessary resources for safe and compliant operation in accordance with governing safety codes and regulations.

SYNTHESIS DEFINITION

Use TQ and VE to enhance the existing process.

Product	*Description*	*Source/Destination Function(s)*
Liquid Wastes and Documentation Generated During AW Cleanup	*All liquid waste that meets the acceptance criteria of the Manage Aqueous Wastes function. Includes liquid wastes with low level radioactive and hazardous contamination levels and required documentation.*	from: 4.5.1 to: 4.5.3
Solid Wastes and Documentation Generated During AW Cleanup	*Radioactive or hazardous material or solid objects from the cleanup of Aqueous Wastes.*	from: 4.5.1 to: 4.5.4

Table 1-90. Develop Aqueous Waste Disposition Plan.

[4.5.2] Develop Aqueous Waste Disposition Plan Receives and determines the characteristics of the aqueous waste to be transferred, assesses the acceptability of the aqueous waste, and develops a plan for the disposition of the aqueous waste, identifies needs for improvements and additions. Scheduling of the waste transfer, treatment, and disposition is done later (in function 4.5.3). Information and intelligence function for managing aqueous waste. Input documentation will be associated with the waste which will provide compositions or a list of constituents of the waste being received, or appropriate waste codes.		
SYNTHESIS DEFINITION Defined aqueous waste program needs.		
Product	***Description***	***Source/Destination Function(s)***

(Only physical products addressed in 4.0)

[4.5.3] Receive/Transport Aqueous Waste

Incoming aqueous waste is received, stored and/or transported to the aqueous waste treatment or disposal facilities including approval of the transfer request, scheduling and prioritization, transfer of the waste, and storage of the waste until it is treated. Associated with the waste will be all of the required documentation. Verification of the characteristics of the waste received, as well as monitoring the waste while in storage is also performed.

SYNTHESIS DEFINITION

Provide a combined facility collection system for uncontaminated 200 Area aqueous wastes (200 Area TEDF). Receive and temporarily store 100 Area and 200 Area aqueous wastes contaminated with low levels of radioactive and hazardous materials in LERF. Identify other aqueous wastes needing treatment. Provide waste packaging, transport, load-in capability, and interim storage for aqueous wastes needing treatment. Retain flexibility to receive and treat aqueous wastes not currently identified as feeds to the 200 Area ETF, 200 Area TEDF, or 300 Area TEDF.

Product	*Description*	*Source/Destination Function(s)*
Excess Aqueous Waste Receive/Transport Facilities *is a constituent of:* • Excess Aqueous Waste Facilities	*Excess facilities generated by the Receive/Transport Aqueous Waste function.*	from: 4.5.3 to: (4.1)
Received Aqueous Waste and Documentation	*Aqueous waste and associated descriptive documentation containing low level radioactive and hazardous contamination levels.*	from: 4.5.3 to: 4.5.4

Table 1-91. Receive/Transport Aqueous Waste.

Table 1-92. Treat Aqueous Waste.

[4.5.4] Treat Aqueous Waste Treats the aqueous waste by whatever method has been developed in the Aqueous Waste Disposition Plan. During treatment, required stack, effluent, and process data are collected. The output streams from the treatment process may be stored, and during storage some waste verification may be performed, if necessary.		
SYNTHESIS DEFINITION Treat 300 Area aqueous wastes in the 300 Area TEDF. Treat 100 Area and 200 Area aqueous wastes which have low levels of radioactive and hazardous materials in the 200 Area ETF. Provide some local treatment of 100 Area aqueous wastes. Investigate the need for and provide mobile treatment capability for small volume waste streams at remote locations.		
Product	***Description***	***Source/Destination Function(s)***
Excess Aqueous Waste Treatment Facilities *is a constituent of:* • Excess Aqueous Waste Facilities	*The excess facilities and equipment from aqueous waste treatment.*	from: 4.5.4 to: (4.1)
Secondary Wastes And Documentation	*The secondary wastes generated from aqueous waste treatment and the associated documentation.*	from: 4.5.4 to: 4.5.5
Treated Effluent And Documentation	*The effluents resulting for aqueous waste treatment along with required effluent data collected during treatment.*	from: 4.5.4 to: 4.5.5

Table 1-93. Disposition Aqueous Waste.

[4.5.5] Disposition Aqueous Waste

Performs final disposition. Waste may be disposed, reused, or released. Verification is performed to ensure that the waste meets all regulatory and permit requirements.

SYNTHESIS DEFINITION

Use current practice of land/river disposal for near term (i.e. 200 Area TEDF, SALDS, 300 Area TEDF). Develop local municipality disposal options. Develop on-site commercial disposal if trade studies show commercialization to be cost-effective.

Product	*Description*	*Source/Destination Function(s)*
Excess Aqueous Waste Disposition Facilities *is a constituent of:* • Excess Aqueous Waste Facilities	*The excess facilities and equipment from the disposition function.*	from: 4.5.5 to: (4.1)
Landfill Wastes *is a constituent of:* • Waste/Materials Dispositioned On-Site	*Waste suitable for disposition in a landfill. Does not include solid, tank, or effluent waste.*	from: 4.5, 4.5.5 to: 200 Area Plateau
Non-Compliant Effluent & Documentation	*The effluent of the aqueous waste treatment which is non-compliant and may need further treatment.*	from: 4.5.5 to: 4.5.3
Releasable Liquid from Aqueous Waste *is a constituent of:* • Released Liquid Effluents	*Liquids cleaned to standards acceptable for release to the environment.*	from: 4.5, 4.5.5 to: (Environment)
Reusable Liquid from Aqueous Waste *is a constituent of:* • Transferrable Resources from Aqueous Waste	*Liquid from aqueous waste processing that can be reused by on-site systems.*	from: 4.5.5 to: (5), (5.1), (5.2), (5.3)
Solid Waste from Aqueous Waste Processing	*Solid waste generated from functions associated with processing aqueous waste.*	from: 4.5, 4.5.5 to: 4.3, 4.3.2, 4.3.2.2
Tank Waste from Aqueous Waste Processing	*Tank waste materials resulting from processing of aqueous waste containing a high level of hazardous or mixed waste.*	from: 4.5, 4.5.5 to: 4.2, 4.2.1, 4.2.1.4

Table 1-94. Correct Unsafe Infrastructure Conditions.

[4.6] Correct Unsafe Infrastructure Conditions

The CORRECT UNSAFE INFRASTRUCTURE CONDITIONS (4.6) function has a dual purpose, namely to correct all unsafe or non-compliant conditions as well as operation of all the services and facilities not identified with the programs or integrated cleanup activities. Infrastructure includes such items as roads, utilities, transportation, office buildings

SYNTHESIS DEFINITION

(Products identified from higher level functions. Architecture not yet defined.)

Product	*Description*	*Source/Destination Function(s)*
Aqueous Waste from Infrastructure	*Aqueous waste containing materials resulting from correction of unsafe or non-compliant conditions or from providing common services in support of the Hanford Cleanup mission.*	from: 4.6 to: 4.5, 4.5.3
Excess Infrastructure Facilities	*Facilities used in providing basic, commonly-used services, that are no longer required.*	from: 4.6 to: 4.1
Infrastructure Support	*Basic, commonly used goods and services provided to multiple functions to sustain their operations.*	from: 4, 4.6 to: 1, 2, 3, 4.1, 4.2, 4.3, 4.4, 4.5, 4.7, 5
Sanitary Landfill Waste *is a constituent of:* • Waste/Materials Dispositioned On-Site	*Waste materials other than those containing radioactive, TRU, hazardous, or sanitary sewage.*	from: 4.6 to: 200 Area Plateau
Sanitary Sewage *is a constituent of:* • Waste/Materials Dispositioned Off-Site	*Refuse liquids or waste matter generated on site.*	from: 4.6 to: City of Richland
Solid Waste from Infrastructure	*Solid waste materials contaminated with radioactive or hazardous materials resulting from correcting unsafe or non-compliant conditions or from operation of Hanford Cleanup mission infrastructure systems.*	from: 4.6 to: 4.3, 4.3.2, 4.3.2.2
Transferrable Resources from Infrastructure *is a constituent of:* • Transferrable Resources	*Equipment, components, or materials resulting from correcting unsafe or non-compliant infrastructure conditions, cleaned up to acceptable levels and having a new owner identified.*	from: 4.6 to: (5), (5.1), (5.2), (5.3)

Table 1-95. Store, Treat, and Disposition SNM/NM/NF Materials.

[4.7] Store, Treat, and Disposition SNM/NM/NF Materials

The management of Special Nuclear Materials (SNM), Nuclear Materials (NM), and Nuclear Fuels (NF) is the receiving, handling, processing, storing, and transfer for ultimate disposition of the materials in a safe and efficient way. SNM/NM/NF in this function includes plutonium as inventoried, uranium, thorium, retrieved special materials, irradiated fuel and other irradiated non waste materials, cesium and strontium capsules, and miscellaneous actinides such as neptunium and californium, and nuclear standards/sources.

SYNTHESIS DEFINITION

Store SNM/NF/NM until a national policy decision on their disposition is formulated. Reevaluate the ROD on cesium and strontium capsule disposition by vitrification in context of overall systems structure. Transfer to beneficial use wherever possible.

Product	*Description*	*Source/Destination Function(s)*
Aqueous Waste from SNM/NM/NF Cleanup	*All liquid waste that meets the acceptance criteria of the Manage Aqueous Wastes function. Includes liquid wastes with low level radioactive and hazardous contamination levels.*	from: 4.7, 4.7.1, 4.7.3, 4.7.5 to: 4.5, 4.5.3
Excess SNM/NM/NF Facilities	*The excess facilities and equipment associated with the storage, treatment, and disposition of SNM/NM/NF materials.*	from: 4.7, 4.7.3, 4.7.4 to: 4.1
SNM/NM/NF Dispositioned Off Site *is a constituent of:* • Waste/Materials Dispositioned Off-Site	*SNM, NM, and NF shipped off site.*	from: 4.7, 4.7.5 to: (Offsite Disposal Site)
Solid Waste from SNM/NM/NF Cleanup	*Radioactive or hazardous material or solid objects from the cleanup of SNM/NM/NF materials.*	from: 4.7, 4.7.1, 4.7.3, 4.7.5 to: 4.3, 4.3.2, 4.3.2.2
Tank Waste from SNM/NM/NF Cleanup	*Tank waste resulting from the cleanup of SNM/NM/NF containing a high level of radioactive, hazardous, or mixed waste.*	from: 4.7, 4.7.1, 4.7.3, 4.7.5 to: 4.2, 4.2.1, 4.2.1.4
Transferrable Resources from SNM/NM/NF Cleanup *is a constituent of:* • Transferrable Resources *aggregates:* • Recycled Containers and Transporters • SNM/NM/NF Materials Transferred To Beneficial Uses	*Equipment, components, and materials from SNM/NM/NF treatment, storage and disposal cleaned up to acceptable levels and having a new owner or user identified.*	from: 4.7 to: (5), (5.1), (5.2), (5.3)

Table 1-96. Maintain Safety and Security Envelope (SNM/NM/NF).

[4.7.1] Maintain Safety and Security Envelope (SNM/NM/NF) Maintains the physical facility, qualified staff, safe and compliant equipment, documentation and provides assessment of safety and compliant states. Provides all necessary safety and security resources for compliance with all governing safety/security codes and regulations. Also included is the periodic verification of material inventory and sample analysis of the materials.		
SYNTHESIS DEFINITION Continue existing safety and security approach with necessary interim upgrades until a preferred longer term approach is selected. Continue to consolidate SNM/NM/NF where practical and cost effective.		
Product	***Description***	***Source/Destination Function(s)***
Aqueous Waste from SNM/NM/NF Cleanup	*All liquid waste that meets the acceptance criteria of the Manage Aqueous Wastes function. Includes liquid wastes with low level radioactive and hazardous contamination levels.*	from: 4.7, 4.7.1, 4.7.3, 4.7.5 to: 4.5, 4.5.3
Solid Waste from SNM/NM/NF Cleanup	*Radioactive or hazardous material or solid objects from the cleanup of SNM/NM/NF materials.*	from: 4.7, 4.7.1, 4.7.3, 4.7.5 to: 4.3, 4.3.2, 4.3.2.2
Tank Waste from SNM/NM/NF Cleanup	*Tank waste resulting from the cleanup of SNM/NM/NF containing a high level of radioactive, hazardous, or mixed waste.*	from: 4.7, 4.7.1, 4.7.3, 4.7.5 to: 4.2, 4.2.1, 4.2.1.4

Table 1-97. Control SNM, NM, and NF Functions.

[4.7.2] Control SNM, NM, and NF Functions Plans, coordinates, and schedules all the necessary operations within the 4.7 function. The function defines the treatment, storage, and transfer needs for the materials; establishes the acceptance criteria; and performs the acceptance or rejection of the material shipping documentation. The function does not include the physical work to perform the operations.		
SYNTHESIS DEFINITION Criteria for the receipt, storage, treatment and disposition of SNM/NM/NF will be defined and negotiated.		
Product	***Description***	***Source/Destination Function(s)***

(Only physical products addressed in 4.0)

Table 1-98. Handle Incoming Materials.

[4.7.3] Handle Incoming Materials Physically handles the material shipping container and packaged material receipt. It is responsible for disposal of the wastes generated during the handling process.		
SYNTHESIS DEFINITION Shipping containers and packaging of materials for shipping will be in certified packaging and containers. Materials receiving stations will have the capability to repackage or decontaminate non-conforming receivals.		
Product	***Description***	***Source/Destination Function(s)***
Accepted Materials	*Materials that meet the acceptance criteria and their form, type, consistency, and quantity have been verified.*	from: 4.7.3 to: 4.7.4
Aqueous Waste from SNM/NM/NF Cleanup	*All liquid waste that meets the acceptance criteria of the Manage Aqueous Wastes function. Includes liquid wastes with low level radioactive and hazardous contamination levels.*	from: 4.7, 4.7.1, 4.7.3, 4.7.5 to: 4.5, 4.5.3
Excess SNM/NM/NF Facilities	*The excess facilities and equipment associated with the storage, treatment, and disposition of SNM/NM/NF materials.*	from: 4.7, 4.7.3, 4.7.4 to: 4.1
Recycled Containers and Transporters *is a constituent of:* • Transferrable Resources from SNM/NM/NF Cleanup	*Transporter and shipping containers suitable for reuse.*	from: 4.7.3 to: (5), (5.1), (5.2), (5.3)
Solid Waste from SNM/NM/NF Cleanup	*Radioactive or hazardous material or solid objects from the cleanup of SNM/NM/NF materials.*	from: 4.7, 4.7.1, 4.7.3, 4.7.5 to: 4.3, 4.3.2, 4.3.2.2
Tank Waste from SNM/NM/NF Cleanup	*Tank waste resulting from the cleanup of SNM/NM/NF containing a high level of radioactive, hazardous, or mixed waste.*	from: 4.7, 4.7.1, 4.7.3, 4.7.5 to: 4.2, 4.2.1, 4.2.1.4

Table 1-99. Store Materials.

[4.7.4] Store Materials Prepares and stabilizes the materials for storage and stores these materials until they are transferred to disposition. It is responsible for disposal of wastes generated during the material storage process.		
SYNTHESIS DEFINITION The SNM/NM/NF will be stored in a safe storage mode, and treated where necessary to provide safe storage. Studies to determine the best alternatives for on-site material storage will continue.		
Product	***Description***	***Source/Destination Function(s)***
Excess SNM/NM/NF Facilities	*The excess facilities and equipment associated with the storage, treatment, and disposition of SNM/NM/NF materials.*	from: 4.7, 4.7.3, 4.7.4 to: 4.1
SNM/NM/NF Materials for Disposition	*SNM/NM/NF materials that are being transfer from storage for disposition. These materials may require further treatment prior to transfer to final disposition.*	from: 4.7.4 to: 4.7.5

Table 1-100. Transfer Outgoing Materials for Disposition.

[4.7.5] Transfer Outgoing Materials for Disposition Prepares, stabilizes, and transfers materials for dispostion. The disposition of materials is one of two processes: The transfer of useable material or the transfer of materials for disposal. It arranges for disposal of incidental wastes generated during the dispostion process.		
SYNTHESIS DEFINITION Packaging/shipping facilities should be included in either a new storage facility or modified existing facility.		
Product	***Description***	***Source/Destination Function(s)***
Aqueous Waste from SNM/NM/NF Cleanup	*All liquid waste that meets the acceptance criteria of the Manage Aqueous Wastes function. Includes liquid wastes with low level radioactive and hazardous contamination levels.*	from: 4.7, 4.7.1, 4.7.3, 4.7.5 to: 4.5, 4.5.3
SNM/NM/NF Dispositioned Off Site *is a constituent of:* • Waste/Materials Dispositioned Off-Site	*SNM, NM, and NF shipped off site.*	from: 4.7, 4.7.5 to: (Offsite Disposal Site)
SNM/NM/NF Materials Transferred To Beneficial Uses *is a constituent of:* • Transferrable Resources from SNM/NM/NF Cleanup	*Nuclear material that is recovered during facility deactivation and transferred to the public or private domains.*	from: 4.7.5 to: (5), (5.1), (5.2), (5.3)
Solid Waste from SNM/NM/NF Cleanup	*Radioactive or hazardous material or solid objects from the cleanup of SNM/NM/NF materials.*	from: 4.7, 4.7.1, 4.7.3, 4.7.5 to: 4.3, 4.3.2, 4.3.2.2
Tank Waste from SNM/NM/NF Cleanup	*Tank waste resulting from the cleanup of SNM/NM/NF containing a high level of radioactive, hazardous, or mixed waste.*	from: 4.7, 4.7.1, 4.7.3, 4.7.5 to: 4.2, 4.2.1, 4.2.1.4

Table 1-101. Transition Resources For Beneficial Use. (2 sheets)

[5] Transition Resources For Beneficial Use

The TRANSITION RESOURCES FOR BENEFICIAL USE function provides for the disposal of excess land, materials and personnel; recycling of material, facilities, equipment and personnel to uses within the mission; and smooth economic transition to a viable local economy as the cleanup mission winds down.

SYNTHESIS DEFINITION

The resource transfer approach consists of a centralized organization which aggressively pursues transfer of wastes, excess equipment, infrastructure, and personnel to new applications inside and outside the mission.

Product	*Description*	*Source/Destination Function(s)*
Resource Transition Needs/Information	*Program formulation, progress, evaluation, and resource requirements information*	from: 5, 5.1, 5.2, 5.3 to: (1), (1.1), (1.3), (1.5)
Resources Redirected for Mission	*Resources released from current Hanford use and reassigned for use in the Hanford clean-up mission.*	from: 5, 5.1 to: 2
Resources Transferred	*Land and other resources transferred for external socially beneficial uses.* *Land and other resources recovered and returned for beneficial uses by the Hanford Cleanup Program (e.g., caretaker, dual use infrastructure, and other Hanford Site missions).*	from: 0, 5, 5.2, 5.3 to: Stakeholders
Transfer Agreement	*Transfer Agreements consisting of identification of resources to be used in building the local economy which essentially causes transferrable items to be removed from the "disposal" list to the transfer list.*	from: 5, 5.3 to: 4, 4.1, 4.1.1, 4.1.1.3, 4.1.2, 4.1.2.3, 4.1.3, 4.1.3.3, 4.1.4, 4.1.4.3, 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.4, 4.3.4, 4.3.4.3, 4.3.5, 4.3.5.7, 4.4, 4.5, 4.5.2, 4.6, 4.7, 4.7.3, 4.7.5

Table 1-101. Transition Resources For Beneficial Use. (2 sheets)

Transitioned Economy *is a constituent of:* • Less Dependent Local Economy	*Resources (e.g., technology, people, expertise) developed and used during cleanup have been leveraged to enhance the economic viability of the regional economy.* *Cleanup resources will have been expended in a manner to support independence of the local/private sector economy. This can be achieved through development of public/private sector partnerships, transfer of technologies for use elsewhere, etc. Also, expenditure of these resources should, where possible, provide national and international benefit by making technology and expertise broadly available.*	from: 5, 5.2, 5.3 to: (Local Economy)

Table 1-102. Determine Beneficial Uses Of Resources.

[5.1] Determine Beneficial Uses Of Resources The DETERMINE BENEFICIAL USES OF RESOURCES (5.1) function determines which resources are candidates for use outside the mission, seeks "customers" to receive the resources, and establishes agreements to actually transfer specific items, as well as personnel.		
SYNTHESIS DEFINITION Transferable resources will be identified as those which have an identified and confirmed future use. This identification will be conducted by an assigned DOE contractor.		
Product	***Description***	***Source/Destination Function(s)***
Authorization for Transfer of Resources	*Approval of the recommended disposition of resources that satisfy the transfer requirements and constraints for transfer outside of mission.*	from: 5.1 to: 5.2, 5.3
Resource Transition Needs/Information	*Program formulation, progress, evaluation, and resource requirements information*	from: 5, 5.1, 5.2, 5.3 to: (1), (1.1), (1.3), (1.5)
Resources Redirected for Mission	*Resources released from current Hanford use and reassigned for use in the Hanford clean-up mission.*	from: 5, 5.1 to: 2

Table 1-103. Transfer Ownership Of Resources Outside Of Mission.

[5.2] Transfer Ownership Of Resources Outside Of Mission

The TRANSFER RESOURCES FOR USE OUTSIDE THE MISSION (5.3) function provides for use of excess mission resources to an outside user without actually transferring ownership.

SYNTHESIS DEFINITION

(Products identified from higher level functions. Architecture not yet defined.)

Product	*Description*	*Source/Destination Function(s)*
Resource Transition Needs/Information	*Program formulation, progress, evaluation, and resource requirements information*	from: 5, 5.1, 5.2, 5.3 to: (1), (1.1), (1.3), (1.5)
Resources Transferred	*Land and other resources transferred for external socially beneficial uses.* *Land and other resources recovered and returned for beneficial uses by the Hanford Cleanup Program (e.g., caretaker, dual use infrastructure, and other Hanford Site missions).*	from: 0, 5, 5.2, 5.3 to: Stakeholders
Transitioned Economy *is a constituent of:* • Less Dependent Local Economy	*Resources (e.g., technology, people, expertise) developed and used during cleanup have been leveraged to enhance the economic viability of the regional economy.* *Cleanup resources will have been expended in a manner to support independence of the local/private sector economy. This can be achieved through development of public/private sector partnerships, transfer of technologies for use elsewhere, etc. Also, expenditure of these resources should, where possible, provide national and international benefit by making technology and expertise broadly available.*	from: 5, 5.2, 5.3 to: (Local Economy)

Table 1-104. Transfer Resources For Use Outside Of Mission.

[5.3] Transfer Resources For Use Outside Of Mission

The process of transferring management of the resource, modifying/upgrading the resource, establishing the conditions for use, and finalizing the transfer of resource use outside of the Hanford mission.

SYNTHESIS DEFINITION

(Products identified from higher level functions. Architecture not yet defined.)

Product	*Description*	*Source/Destination Function(s)*
Resource Transition Needs/Information	*Program formulation, progress, evaluation, and resource requirements information*	from: 5, 5.1, 5.2, 5.3 to: (1), (1.1), (1.3), (1.5)
Resources Transferred	*Land and other resources transferred for external socially beneficial uses.* *Land and other resources recovered and returned for beneficial uses by the Hanford Cleanup Program (e.g., caretaker, dual use infrastructure, and other Hanford Site missions).*	from: 0, 5, 5.2, 5.3 to: Stakeholders
Transfer Agreement	*Transfer Agreements consisting of identification of resources to be used in building the local economy which essentially causes transferrable items to be removed from the "disposal" list to the transfer list.*	from: 5, 5.3 to: 4, 4.1, 4.1.1, 4.1.1.3, 4.1.2, 4.1.2.3, 4.1.3, 4.1.3.3, 4.1.4, 4.1.4.3, 4.3, 4.3.1, 4.3.1.1, 4.3.1.2, 4.3.1.3, 4.3.1.4, 4.3.1.5, 4.3.2, 4.3.2.1, 4.3.2.2, 4.3.3, 4.3.3.1, 4.3.3.2, 4.3.3.4, 4.3.4, 4.3.4.3, 4.3.5, 4.3.5.7, 4.4, 4.5, 4.5.2, 4.6, 4.7, 4.7.3, 4.7.5
Transitioned Economy *is a constituent of:* • Less Dependent Local Economy	*Resources (e.g., technology, people, expertise) developed and used during cleanup have been leveraged to enhance the economic viability of the regional economy.* *Cleanup resources will have been expended in a manner to support independence of the local/private sector economy. This can be achieved through development of public/private sector partnerships, transfer of technologies for use elsewhere, etc. Also, expenditure of these resources should, where possible, provide national and international benefit by making technology and expertise broadly available.*	from: 5, 5.2, 5.3 to: (Local Economy)

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2.0 N^2 DIAGRAMS

This section contains the N^2 diagrams for the functions discussed in Section 1. The N^2 diagram has been used extensively to develop data interfaces, but it can also be used to clarify product interfaces. A representative N^2 chart is shown in Figure 2-1. The system functions (including N) are placed on the diagonal, and the remainder of the squares in the N x N matrix represent the interfaces with the function: product inputs and outputs. Where a blank square exists, there is no interface, input, or output between the respective functions. Products flow clockwise between functions: the symbol F1 -> F2 indicates product flow between function F1 and F2 and the symbol F2 -> F1 indicates product flow between function F2 and F1. Products shown in the margins of the N^2 diagram are inputs or outputs to or from functions outside the "bounds" of the function being depicted. For example, inputs and outputs depicted in the margins of the N^2 diagram for Function 4.2 are from functions other than 4.2. In Figures 2-2 through 2-26, the N^2 diagrams are depicted with the function names on the diagonal and the products being provided are defined in the appropriate squares or in the margins of the diagram.

Figure 2-1. N^2 Diagram Definition.

Inputs to F1 from External Functions	Inputs to F2 from External Functions	Inputs to F3 from External Functions	Inputs to F4 from External Functions	Inputs to F5 from External Functions	
Function F1	F1 -> F2	F1 -> F3		F1 -> F5	Outputs from F1 to External Functions
	Function F2	F2 -> F3			Outputs from F2 to External Functions
		Function F3			Outputs from F3 to External Functions
			Function F4		Outputs from F4 to External Functions
F1 <- F5			F4 <- F5	Function F5	Outputs from F5 to External Functions

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Figure 2-2. Universe Context.

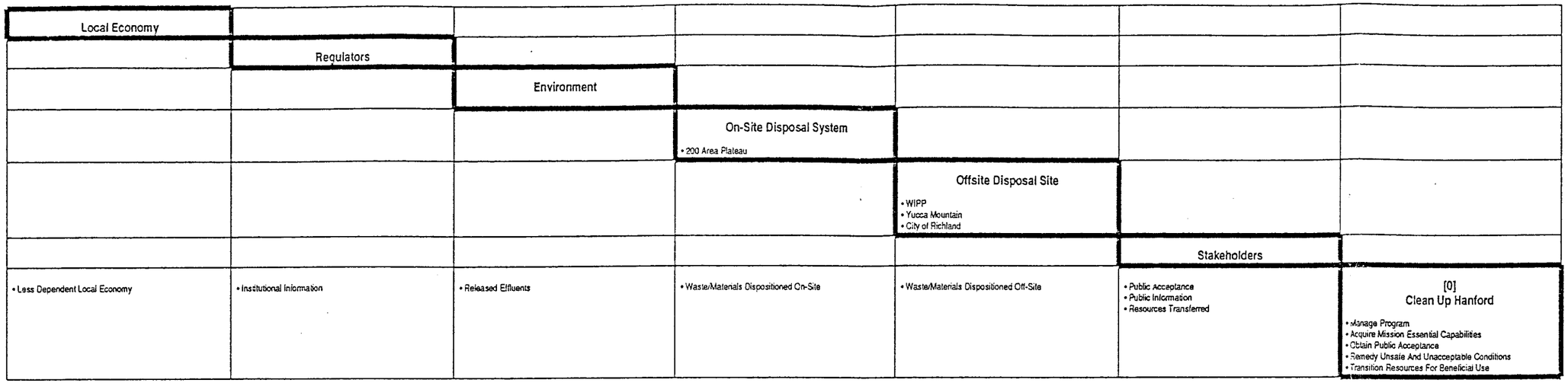


Figure 2-3. Clean Up Hanford.

[1] Manage Program • Establish Management System • Perform Systems Engineering • Formulate Program • Direct Program • Evaluate Program • ENSURE REGULATORY COMPLIANCE	• Allocated Resources • Defined Work Package • Direction & Control • Mission Requirements	• Allocated Resources • Cleanup Program Information • Defined Work Package • Direction & Control • Mission Requirements	• Allocated Resources • Defined Work Package • Direction & Control • Mission Requirements	• Allocated Resources • Defined Work Package • Direction & Control • Mission Requirements	• Institutional Information
	[2] Acquire Mission Essential Capabilities • Formulate Acquisition Strategy For Mission Essential Capabilities • Provide Expertise • Provide Technology • Provide Facilities, Equipment, Infrastructure, & Supplies • Provide Essential Information • Provide Integrated Independent Services	• Mission Essential Capabilities	• Mission Essential Capabilities	• Mission Essential Capabilities • Transferrable Technology	• Enhanced Local Economy
• Public Needs/Information • Public Values		**[3] Obtain Public Acceptance** • Identify Issues • Identify Information Needs For Public Groups • Develop Understanding Of Public/Mission Differences • Reconcile Differences			• Public Acceptance • Public Information
• Infrastructure Support	• Infrastructure Support	• Infrastructure Support	**[4] Remedy Unsafe And Unacceptable Conditions** • Deactivate Facilities • Remediate Tank Waste • Remedy Solid Waste • Remedy/Restore Sites, Facilities, & Groundwater • Manage Aqueous Wastes • Correct Unsafe Infrastructure Conditions • Store, Treat, and Disposition SNM/NW/NF Materials	• Infrastructure Support • Transferrable Resources	• Released Gaseous Effluents • Released Liquid Effluents • Waste/Materials Dispositioned Off-Site • Waste/Materials Dispositioned On-Site
• Resource Transition Needs/Information	• Resources Redirected for Mission		• Transfer Agreement	**[5] Transition Resources For Beneficial Use** • Determine Beneficial Uses Of Resources • Transfer Ownership Of Resources Outside Of Mission • Transfer Resources For Use Outside Of Mission	• Transitioned Economy • Resources Transferred

Figure 2-4. Manage Program.

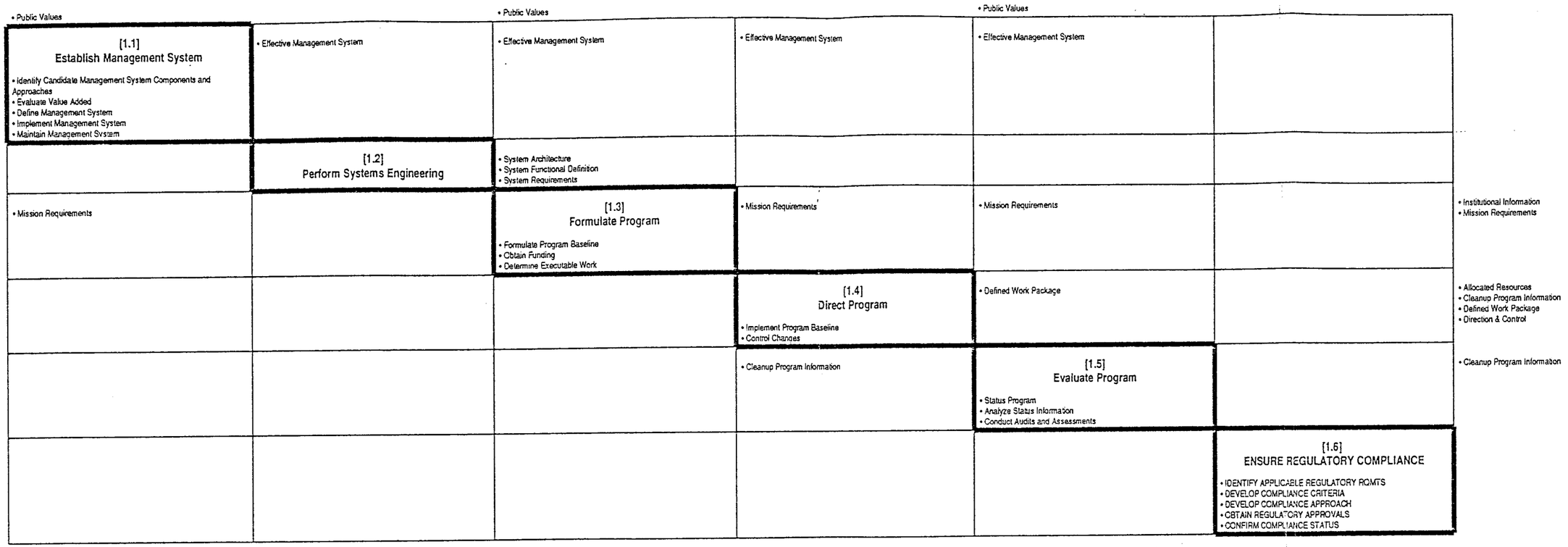


Figure 2-5. Obtain Public Acceptance.

• Allocated Resources • Cleanup Program Information • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements	• Defined Work Package • Direction & Control • Mission Requirements	• Defined Work Package • Direction & Control • Mission Requirements	• Defined Work Package • Direction & Control • Mission Requirements	
[3.1] **Identify Issues** • Identify Decisions/Actions/Information Of Interest To The Various Public Sectors • Involve Publics In Identification Of Decisions/Actions/Information Of Interest To Public Sectors • Set Public Involvement Baseline For Decisions/Actions/Information	• ID Key Issues For PI			• Non-Issue Information
	[3.2] **Identify Information Needs For Public Groups** • Identify Interested Publics For Each Decision/Information Group • Define Information Needs For Each Interest Group • Develop Public Involvement Plan For Each Combination Of Public Group/(Decision/Information Area)	• Public Group Specific PI Plan		
		[3.3] **Develop Understanding Of Public/Mission Differences** • Define Differences In 'Objectives' • Define Differences In Values • Define Differences In Concerns • Define Differences In Priorities • Define Differences On Specific Decisions		• Public Acceptance • Public Values
			[3.4] **Reconcile Differences** • Narrow Differences Between Mission Plans/Activities • Develop Compromise/Consensus Positions	• Public Needs/Information

Figure 2-6. Remedy Unsafe And Unacceptable Conditions.

• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Transfer Agreement		• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Transfer Agreement	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Transfer Agreement	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Transfer Agreement	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Transfer Agreement	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Transfer Agreement	
[4.1] Deactivate Facilities • Categorize Facilities By Type • Deactivate Facilities With Special Nuclear Materials & Nuclear Materials (Type 1 Fcity) • Deactivate Facilities With Radioactive & Hazardous Material (Type 2 Fcity) • Deactivate Facilities With Only Hazardous Material, Including Asbestos (Type 3 Fcity) • Deactivate Facilities Without Radioactive Or Hazardous Material (Type 4 Fcity)	• Tank Waste from Deactivation	• Solid Waste from Deactivation	• Deactivated Facilities	• Aqueous Waste from Deactivation		• SNM/NM/NF Recovered from Deactivation	• Transferrable Resources from Deactivation
• Closure-Ready DSTs • Closure-Ready SSTs • Excess Tank Waste Facilities	**[4.2] Remediate Tank Waste** • Manage Tank Waste (MTW) • Process Waste • Manage System Generated Waste & Excess Facilities	• Solid Waste from Tank Waste Remediation		• Aqueous Waste from Tank Waste Remediation			• Dispositioned Gaseous Effluent • Transferrable Resources from Tank Waste Remediation • Dispositioned Solid Waste (TWRS) • Immobilized HLW • Immobilized TRU Waste • OverPacked Capsules • Closed ILLW Sites • Dispositioned Solid Waste (TWRS)
• Excess Solid Waste Facilities	• Tank Waste from Solid Waste Cleanup	**[4.3] Remedy Solid Waste** • Maintain Solid Waste Safety And Compliance Envelope • Receive Solid Waste • Characterize Solid Waste • Determine Solid Waste Disposition Requirements • Disposition Solid Waste		• Aqueous Waste from Solid Waste Cleanup			• Transferrable Resources from Solid Waste • Hazardous Waste • Processed Post-70 TRU/TRUM • LLMW/LLW • RCRA Covered Trench
• Excess Remedy/Restore Facilities	• Tank Waste from Remedy/Restore	• Solid Waste from Remedy/Restore	**[4.4] Remedy/Restore Sites, Facilities, & Groundwater** • Implement ER Capabilities and Support • Perform Remedial Action • Decontaminate and Decommission Surplus Facilities • Treat, Store, and Dispose of Waste • Perform Groundwater Remedial Action	• Aqueous Waste from Remedy/Restore			• Released Liquid Effluents from R&R • Transferrable Resources from Remedy/Restore • Closed Waste Disposal Facility
• Excess Aqueous Waste Facilities	• Tank Waste from Aqueous Waste Processing	• Solid Waste from Aqueous Waste Processing		**[4.5] Manage Aqueous Wastes** • Maintain Aqueous Waste Safety and Compliance Envelope • Develop Aqueous Waste Disposition Plan • Receive/Transport Aqueous Waste • Treat Aqueous Waste • Disposition Aqueous Waste			• Releasable Liquid from Aqueous Waste • Transferrable Resources from Aqueous Waste • Landfill Wastes
• Excess Infrastructure Facilities • Infrastructure Support	• Infrastructure Support	• Infrastructure Support • Solid Waste from Infrastructure	• Infrastructure Support	• Aqueous Waste from Infrastructure • Infrastructure Support	**[4.6] Correct Unsafe Infrastructure Conditions** • Operate Infrastructure • Maintain Infrastructure	• Infrastructure Support	• Infrastructure Support • Transferrable Resources from Infrastructure • Sanitary Sewage • Sanitary Landfill Waste
• Excess SNM/NM/NF Facilities	• Tank Waste from SNM/NM/NF Cleanup	• Solid Waste from SNM/NM/NF Cleanup		• Aqueous Waste from SNM/NM/NF Cleanup		**[4.7] Store, Treat, and Disposition SNM/NM/NF Materials** • Maintain Safety and Security Envelope (SNM/NM/NF) • Control SNM, NM, and NF Functions • Handle Incoming Materials • Store Materials • Transfer Outgoing Materials for Disposition	• Transferrable Resources from SNM/NM/NF Cleanup • SNM/NM/NF Dispositioned Off Site

Figure 2-7. Deactivate Facilities.

• Closure-Ready DSTs • Closure-Ready SSTs • Excess Aqueous Waste Facilities • Excess Aqueous Waste Facilities • Excess Infrastructure Facilities • Excess Remedy/Restore Facilities • Excess SNM/NM/NF Facilities • Excess Solid Waste Facilities • Excess Tank Waste Facilities • Excess Infrastructure Facilities • Excess Remedy/Restore Facilities • Excess SNM/NM/NF Facilities • Excess Solid Waste Facilities • Excess Tank Waste Facilities	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Transfer Agreement	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Transfer Agreement	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Transfer Agreement	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Transfer Agreement	
[4.1.0] **Categorize Facilities By Type**	• Excess Type 1 Facilities	• Excess Type 2 Facilities	• Excess Type 3 Facilities	• Excess Type 4 Facilities	
	[4.1.1] **Deactivate Facilities With Special Nuclear Materials & Nuclear Materials (Type 1 Fcity)** • Maintain Safety & Compliance Envelope (Type 1 Fcity) • Determine Deactivation Plans & Negotiate Turnover Endpoint (Type 1 Fcity) • Stabilize & Reconfigure Facilities For Minimum Surveillance (Type 1 Fcity) • Disposition Currently Identified Radioactive Materials Held As A Potential Product & Special Nuclear Material (Type 1 Fcity)	• Stabilized Type 2 Facility			• Aqueous Waste from Deactivation (Type 1) • SNM/NM/NF Recovered from Deactivation • Solid Waste from Deactivation (Type 1) • Tank Waste from Deactivation (Type 1) • Transferrable Resources from Deactivation
		[4.1.2] **Deactivate Facilities With Radioactive & Hazardous Material (Type 2 Fcity)** • Maintain Safety & Compliance Envelope (Type 2 Fcity) • Determine Deactivation Plan & Negotiate Turnover Endpoint (Type 2 Fcity) • Stabilize & Reconfigure Facilities For Minimum Surveillance (Type 2 Fcity)	• Stabilized Type 3 Facility		• Aqueous Waste from Deactivation (Type 2) • Solid Waste from Deactivation (Type 2) • Tank Waste from Deactivation (Type 2) • Transferrable Resources from Deactivation
			[4.1.3] **Deactivate Facilities With Only Hazardous Material, Including Asbestos (Type 3 Fcity)** • Maintain Safety & Compliance Envelope (Type 3 Fcity) • Determine Deactivation Plan & Negotiate Turnover Endpoint (Type 3 Fcity) • Stabilize & Reconfigure Facilities For Minimum Surveillance (Type 3 Fcity)		• Aqueous Waste from Deactivation (Type 3) • Deactivated Type 3 Facility • Solid Waste from Deactivation (Type 3) • Transferrable Resources from Deactivation
				[4.1.4] **Deactivate Facilities Without Radioactive Or Hazardous Material (Type 4 Fcity)** • Maintain Safety & Compliance Envelope (Type 4 Fcity) • Determine Deactivation Plan & Negotiate Turnover Endpoint (Type 4 Fcity) • Stabilize & Reconfigure Facilities For Minimum Surveillance (Type 4 Fcity)	• Deactivated Type 4 Facility • Transferrable Resources from Deactivation

Figure 2-8. Deactivate Facilities With Special Nuclear Materials & Nuclear Materials (Type 1 Fcity).

• Allocated Resources • Direction & Control • Excess Type 1 Facilities • Mission Essential Capabilities • Mission Requirements	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Transfer Agreement	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements	
[4.1.1.1] Maintain Safety & Compliance Envelope (Type 1 Fcity) • Maintain Safe & Compliant Operations (Type 1 Fcity) • Maintain Safe & Compliant Systems, Equipment, & Structure (Type 1 Fcity) • Maintain Safety & Compliance Documentation (Type 1 Fcity) • Maintain Qualified Facility Staff (Type 1 Fcity) • Assess Safety & Compliance State (Type 1 Fcity)	• Safe and Compliant Resources (Type 1)	• Safe and Compliant Resources (Type 1)	• Safe and Compliant Resources (Type 1)	• Aqueous Waste from Deactivation (Type 1) • Solid Waste from Deactivation (Type 1) • Tank Waste from Deactivation (Type 1)
	[4.1.1.2] Determine Deactivation Plans & Negotiate Turnover Endpoint (Type 1 Fcity) • Characterize Facility Initial State (Type 1 Fcity) • Develop Facility Deactivation Plans (Type 1 Fcity) • Negotiate & Maintain Turnover Endpoint (Type 1 Fcity) • Design Turnover State (Type 1 Fcity)			
		[4.1.1.3] Stabilize & Reconfigure Facilities For Minimum Surveillance (Type 1 Fcity) • Modify For Minimum Cost (Type 1 Fcity) • Deactivate Non-Essential Systems, Components, & Structures (Type 1 Fcity) • Disposition Resources & Waste (Type 1 Fcity) • Transfer The Stabilized Facilities (Type 1 Fcity)	• Stabilized Type 1 Facility	
			[4.1.1.4] Disposition Currently Identified Radioactive Materials Held As A Potential Product & Special Nuclear Material (Type 1 Fcity) • Categorize Materials As Waste Or Special Nuclear Material/Potential Product (Type 1 Fcity) • Collect SNM,NM,NF Materials (Type 1 Fcity) • Prepare Materials For Transport & Storage (Type 1 Fcity) • Temporarily Store SNM,NM,NF (Type 1 Fcity) • Transport Materials (Type 1 Fcity)	• SNM/NM/NF Recovered from Deactivation • Stabilized Type 2 Facility • Transferrable Resources from Deactivation

Figure 2-9. Deactivate Facilities With Radioactive & Hazardous Material (Type 2 Fclty).

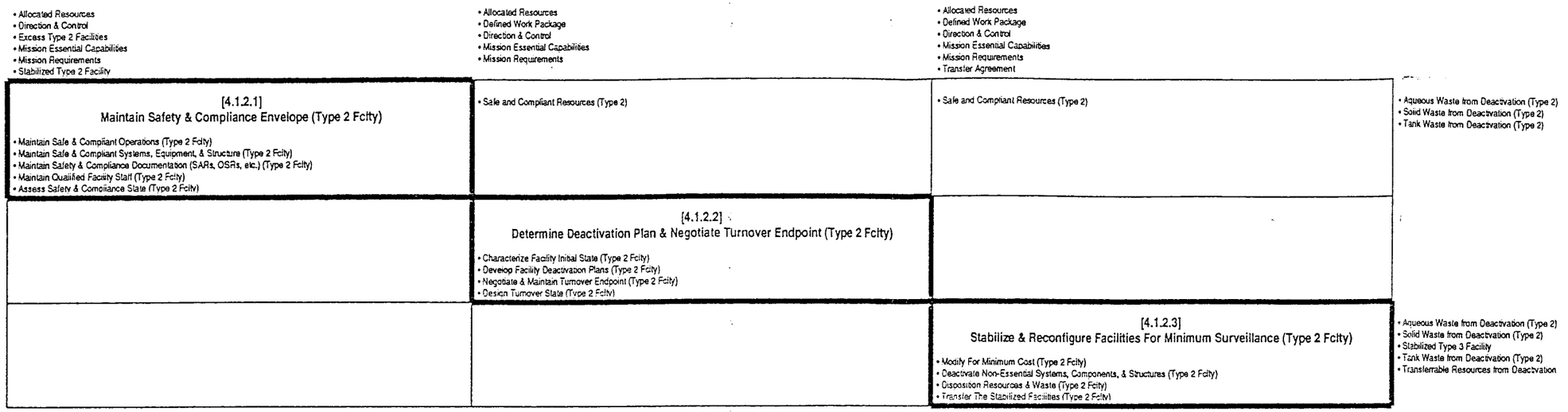


Figure 2-10. Deactivate Facilities With Only Hazardous Material, Including Asbestos (Type 3 Fcity).

• Allocated Resources • Direction & Control • Excess Type 3 Facilities • Mission Essential Capabilities • Mission Requirements • Stabilized Type 3 Facility	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Transfer Agreement	
[4.1.3.1] **Maintain Safety & Compliance Envelope (Type 3 Fcity)** • Maintain Safe & Compliant Operations (Type 3 Fcity) • Maintain Safe & Compliant Systems, Equipment, & Structure (Type 3 Fcity) • Maintain Safety & Compliance Documentation (SARs, etc.) (Type 3 Fcity) • Maintain Qualified Facility Staff (Type 3 Fcity) • Assess Safety & Compliance State (Type 3 Fcity)	• Safe and Compliant Resources (Type 3)	• Safe and Compliant Resources (Type 3)	• Aqueous Waste from Deactivation (Type 3) • Solid Waste from Deactivation (Type 3)
	[4.1.3.2] **Determine Deactivation Plan & Negotiate Turnover Endpoint (Type 3 Fcity)** • Characterize Facility Initial State (Type 3 Fcity) • Develop Facility Deactivation Plan (Type 3 Fcity) • Negotiate & Maintain Turnover Endpoint (Type 3 Fcity) • Design Turnover State (Type 3 Fcity)		
		[4.1.3.3] **Stabilize & Reconfigure Facilities For Minimum Surveillance (Type 3 Fcity)** • Modify For Minimum Cost (Type 3 Fcity) • Deactivate Non-Essential Systems, Components, & Structures (Type 3 Fcity) • Disposition Resources & Waste (Type 3 Fcity) • Transfer The Stabilized Facilities (Type 3 Fcity)	• Transferrable Resources from Deactivation

Figure 2-11. Deactivate Facilities Without Radioactive Or Hazardous Material (Type 4 Fcity).

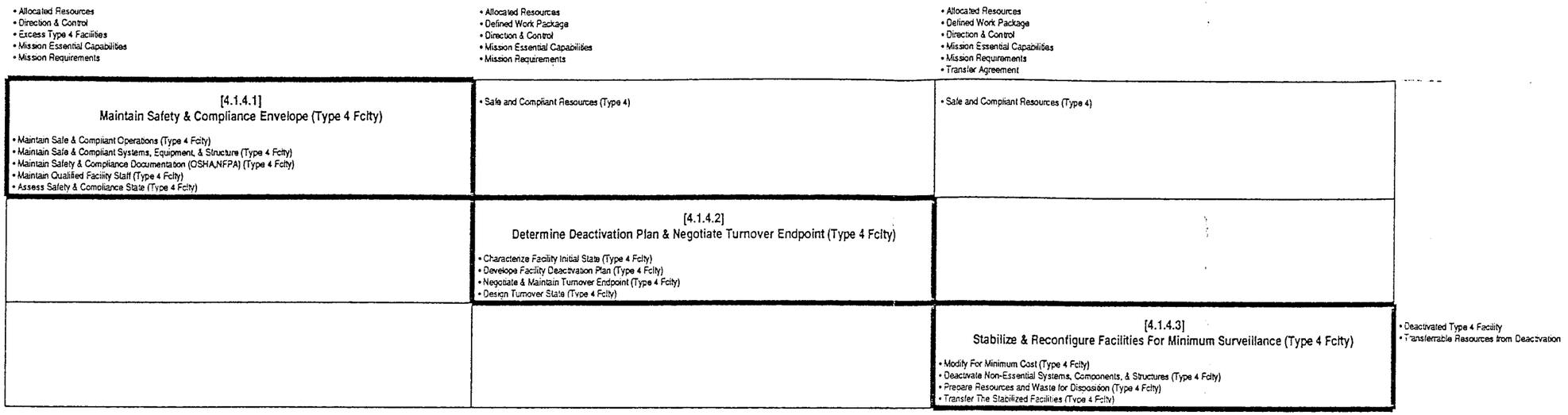


Figure 2-12. Remediate Tank Waste.

<table>
<tr>
<td>• Tank Waste from Aqueous Waste Processing
• Tank Waste from Deactivation
• Tank Waste from Remedy/Restore
• Tank Waste from SNM/NNNF Cleanup
• Tank Waste from Solid Waste Cleanup

[4.2.1]
Manage Tank Waste (MTW)

• Store Waste
• Characterize Waste
• Retrieve Waste (RW)
• Transfer Waste
• Concentrate Waste</td>
<td>• Cesium/Strontium Capsules
• Pretreated HLW for Immobilization
• Pretreated TRU Waste for Immobilization
• Tank Waste for Pretreatment</td>
<td>• MTW SGW & EF
• Pretreated LLW for Immobilization</td>
<td></td>
</tr>
<tr>
<td>• In-Process Waste</td>
<td>[4.2.2]
Process Waste

• Pretreat Waste
• Immobilize HLW/TRU Waste
• Prepare Cs/Sr Capsules for Disposal
• Interim Store IHLW
• Interim Store and Transport ITRU Waste</td>
<td>• PW SGW & EF</td>
<td>• Immobilized HLW
• Immobilized TRU Waste
• OverPacked Capsules</td>
</tr>
<tr>
<td>• Liquid SW for Storage
• Reusable Materials for MTW</td>
<td>• Reusable Materials for PW
• SW for Processing</td>
<td>[4.2.3]
Manage System Generated Waste & Excess Facilities

• Immobilize & Dispose LLW
• Disposition Gaseous Effluent (DGE)
• Disposition Liquid Effluent (DLE)
• Disposition Solid Waste (DSW)
• Disposition Excess Facilities (DEF)
• Disposition Reusable Materials (DRM)</td>
<td>• Aqueous Waste from Tank Waste Remediation
• Closed ILLW Sites
• Dispositioned Gaseous Effluent
• Dispositioned Solid Waste (TWRS)
• Excess Tank Waste Facilities
• Solid Waste from Tank Waste Remediation
• Reusable Facilities
• Reusable Materials for Site</td>
</tr>
</table>

Figure 2-13. Manage Tank Waste (MTW).

			• In-Process Waste • Liquid SW for Storage • Tank Waste from Aqueous Waste Processing • Tank Waste from Deactivation • Tank Waste from Remedy/Restore • Tank Waste from SNM/NM/NF Cleanup • Tank Waste from Solid Waste Cleanup		
[4.2.1.1] Store Waste • Store DST Waste • Store SST Waste • Store MUST Waste • Store Cs / Sr Capsules	• Tank Waste for Sampling	• Cesium/Strontium Capsules for Retrieval • Tank Waste for Retrieval			• Excess Facilities from MTW • MTW SG Gaseous Waste • MTW SG Liquid Effluent • MTW SG Solid Waste
	[4.2.1.2] Characterize Waste • Perform Data Quality Objective Activities • Prepare Analysis Plans • Acquire Physical Samples for Analysis • Analyze Samples • Conduct In Situ Analysis • Manage Data • Evaluate Generator Knowledge and Prepare Tank Characterization Reports				• Laboratory Waste from Characterization • MTW SG Gaseous Waste • MTW SG Liquid Effluent • MTW SG Solid Waste
		[4.2.1.3] Retrieve Waste (RW) • Retrieve SST Waste • Retrieve DST Waste • Retrieve MUST Waste • Retrieve Cesium / Strontium Capsules	• Retrieved Cesium/Strontium Capsules • Retrieved Tank Waste		• Excess Facilities from MTW • MTW SG Gaseous Waste • MTW SG Liquid Effluent • MTW SG Solid Waste
• Waste to Storage	• Conditioned Waste for Sampling		[4.2.1.4] Transfer Waste • Prepare Transfer System • Store Waste for Transfer • Condition Waste for Transfer • Move Waste • Restore Transfer System	• Concentrate Waste Feed	• Cesium/Strontium Capsules • Excess Facilities from MTW • MTW SG Gaseous Waste • MTW SG Solid Waste • Pretreated HLW for Immobilization • Pretreated LLW for Immobilization • Pretreated TRU Waste for Immobilization • Tank Waste for Pretreatment
	• Waste Concentrate for Sampling • Waste Concentration Feed for Sampling		• Waste Concentrate	[4.2.1.5] Concentrate Waste • Pump Feed • Evaporate Feed • Condense Vapors • Discharge Effluent	• Excess Facilities from MTW • MTW SG Gaseous Waste • MTW SG Liquid Effluent • MTW SG Solid Waste

Figure 2-14. Process Waste.

• Tank Waste for Pretreatment	• Pretreated HLW for Immobilization • Pretreated TRU Waste for Immobilization • SW for Processing	• Cesium/Strontium Capsules			
[4.2.2.1] Pretreat Waste • Prepare Tank Waste Liquids and HLW Solids • Pretreat LLW • Pretreat HLW/TRU Sludge • Prepare Separated Radionuclides					• In-Process Waste • Excess Facilities from PW • PW SG Gaseous Waste • PW SG Liquid Effluent • PW SG Solid Waste
	[4.2.2.2] Immobilize HLW/TRU Waste • Prepare Melter Feed • Vitrify HLW/TRU Waste • Encapsulate IHLW/ITRU • Verify IHLW/ITRU Containers • Support Immobilization Process		• IHLW for Storage	• ITRU Waste for Storage	• Excess Facilities from PW • PW SG Gaseous Waste • PW SG Liquid Effluent • PW SG Solid Waste
		[4.2.2.3] Prepare Cs/Sr Capsules for Disposal	• Overpacked Cs/Sr Capsules for Storage/Disposal		• Excess Facilities from PW • PW SG Gaseous Waste • PW SG Liquid Effluent • PW SG Solid Waste
			[4.2.2.4] Interim Store IHLW • Transport IHLW Container to Interim Storage • Isolate & Monitor IHLW Containers • Retrieve IHLW Container from Storage • Load IHLW Transport Cask • Support Storage of IHLW		• Immobilized HLW • OverPacked Capsules • Excess Facilities from PW • PW SG Liquid Effluent • PW SG Solid Waste
				[4.2.2.5] Interim Store and Transport ITRU Waste • Transport ITRU Waste Container to Interim Storage • Isolate & Monitor ITRU Waste Containers • Retrieve ITRU Waste Container from Storage • Load ITRU Waste Transport Cask • Ship ITRU Waste • Support Storage of ITRU	• Immobilized TRU Waste • Excess Facilities from PW • PW SG Liquid Effluent • PW SG Solid Waste

Figure 2-15. Manage System Generated Waste & Excess Facilities.

• Pretreated LLW for Immobilization	• MTW SG Gaseous Waste • PW SG Gaseous Waste	• MTW SG Liquid Effluent • PW SG Liquid Effluent	• MTW SG Solid Waste • PW SG Solid Waste	• Excess Facilities from MTW • Excess Facilities from PW		
[4.2.3.1] Immobilize & Dispose LLW • Immobilize LLW • Dispose / Store Waste • Close Site	• Gaseous Waste from ILLW	• Liquid Effluent from ILLW	• Solid Waste from ILLW	• Excess Facilities from ILLW		• Closed ILLW Sites • SW from Immobilize & Dispose LLW
	[4.2.3.2] Disposition Gaseous Effluent (DGE) • Receive Facility Off Gas Streams • Filter / Scrub Off Gas • Monitor Off Gas • Exhaust Off Gas	• Liquid Effluent from DGE	• Solid Waste from DGE			• Dispositioned Gaseous Effluent
	• Gaseous Effluent from DLE	**[4.2.3.3] Disposition Liquid Effluent (DLE)** • Receive Liquid Effluent • Treat Liquid Effluent • Monitor Liquids • Dispose / Store Liquids	• Solid Waste from DLE		• Reusable Liquid from DLE	• Dispositioned Liquid Effluent • Dispositioned Liquid Effluent • Dispositioned Liquid Effluent • Liquid SW for Storage
• Low Level SW	• Gaseous Effluent from DSW	• Cleaning Waste	**[4.2.3.4] Disposition Solid Waste (DSW)** • Segregate Solid Waste • Characterize Solid Waste (TWRS) • Decon & Size Solid Waste • Package Solid Waste (TWRS) • Ship Solid Waste (TWRS)		• Reusable Solids from DSW	• Dispositioned Solid Waste (TWRS) • Dispositioned Solid Waste (TWRS) • SW for Processing
	• Gaseous Effluent from DEF	• Liquid Effluent from DEF	• Solid Waste from DEF	**[4.2.3.5] Disposition Excess Facilities (DEF)** • Shutdown and Deactivate Facilities • Remove Residual Inventories • Decontaminate Facilities, Tanks, & Lines • Shutdown and Disconnect Utilities and Services • Modify Facility for Transfer		• Closure-Ready DSTs • Closure-Ready SSTs • Excess Tank Waste Facilities
• Reusable Materials for MSGW & EF	• Gaseous Effluent from DRM	• Liquid Effluent from DRM	• Solid Waste from DRM	• Excess Facilities from DRM • Reusable Materials for MSGW & EF	**[4.2.3.6] Disposition Reusable Materials (DRM)** • Receive Reusable Materials • Store & Treat Reusable Materials • Transport Reusable Materials	• Reusable Materials for MTW • Reusable Materials for PW • Reusable Materials for Site

Figure 2-16. Remedy Solid Waste.

• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Transfer Agreement	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Solid Waste from Aqueous Waste Processing • Solid Waste from Deactivation • Solid Waste from Infrastructure • Solid Waste from Remedy/Restore • Solid Waste from SNM/NM/NF Cleanup • Solid Waste from Tank Waste Remediation • Transfer Agreement	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Transfer Agreement	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Transfer Agreement	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Transfer Agreement	
[4.3.1] **Maintain Solid Waste Safety And Compliance Envelope** • Maintain Safe And Compliant Solid Waste Operational Environment • Maintain Safe And Compliant Solid Waste Systems, Equipment And Structures • Maintain Safe And Compliant Solid Waste Documentation (SARs, OSRs, etc.) • Maintain Qualified Solid Waste Staff • Assess Solid Waste Safety And Compliance State	• Solid Waste Generated During Solid Waste Cleanup Operations				• Aqueous Waste from Solid Waste Cleanup • Tank Waste from Solid Waste Cleanup • Transferrable Resources from Solid Waste
	[4.3.2] **Receive Solid Waste** • Retrieve Existing Solid Waste • Receive New Solid Waste	• Data/Samples for Characterization		• Received Solid Waste	• Aqueous Waste from Solid Waste Cleanup • Excess Solid Waste Facilities • Tank Waste from Solid Waste Cleanup • Transferrable Resources from Solid Waste
	• Excess Solid Waste Samples	**[4.3.3]** **Characterize Solid Waste** • Acquire Solid Waste Process Knowledge • Analyze Solid Waste Inventory • Archive Solid Waste Samples/Characterization Data • Assess Solid Waste Characterization Information			• Aqueous Waste from Solid Waste Cleanup • Tank Waste from Solid Waste Cleanup • Transferrable Resources from Solid Waste
			[4.3.4] **Determine Solid Waste Disposition Requirements** • Compile Imposed Solid Waste Requirements • Evaluate Solid Waste Requirements For Disposition • Prepare Solid Waste Disposition Specifications		• Transferrable Resources from Solid Waste
		• Samples of Waste Requiring Additional Characterization		**[4.3.5]** **Disposition Solid Waste** • Treat Solid Waste • Package Solid Waste • Certify Solid Waste • Store Solid Waste • Ship Solid Waste • Dispose Solid Waste • Assess Solid Waste TSD Capability Needs And Disposal Resources • Archive Solid Waste Process Samples and Records	• Aqueous Waste from Solid Waste Cleanup • Excess Solid Waste Facilities • Hazardous Waste • LLMW/LLW • Processed Post-70 TRU/TRUM • RCRA Covered Trench • Tank Waste from Solid Waste Cleanup • Transferrable Resources from Solid Waste

Figure 2-17. Maintain Solid Waste Safety And Compliance Envelope.

• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Transfer Agreement	• Allocated Resources • Mission Essential Capabilities • Transfer Agreement	• Allocated Resources • Mission Essential Capabilities • Transfer Agreement	• Allocated Resources • Mission Essential Capabilities • Transfer Agreement	• Allocated Resources • Mission Essential Capabilities • Transfer Agreement	
[4.3.1.1] **Maintain Safe And Compliant Solid Waste Operational Environment** • Acquire Knowledge Of Solid Waste Status • Provide Surveillance of Solid Waste Facility Operations • Provide Access Control to Solid Waste Facilities • Provide Work Control for Solid Waste Facilities • Provide Property Management for Solid Waste Facilities • Provide Non-Hazardous Solid Waste Material Management • Provide Hazardous Solid Waste Material Management • Provide Radioactive/TRU Solid Waste Material Management					• Aqueous Waste from Solid Waste Cleanup • Tank Waste from Solid Waste Cleanup • Transferrable Resources from Solid Waste
	[4.3.1.2] **Maintain Safe And Compliant Solid Waste Systems, Equipment And Structures** • Perform Routine Maintenance for Solid Waste Systems, Equipment, and Structures • Perform Preventative Maintenance on Solid Waste Systems, Equipment, and Structures • Perform Solid Waste Equipment Calibrations • Perform Minor Modifications to Solid Waste Facility Systems				• Aqueous Waste from Solid Waste Cleanup • Solid Waste Generated During Solid Waste Cleanup Operations • Tank Waste from Solid Waste Cleanup • Transferrable Resources from Solid Waste
		[4.3.1.3] **Maintain Safe And Compliant Solid Waste Documentation (SARs, OSRs, etc.)** • Maintain Solid Waste Facility Operations Safety Documents • Maintain Solid Waste Facility Operations Procedures • Maintain Solid Waste Facility Configuration Drawings • Maintain Maintenance Procedures for Solid Waste Systems, Equipment, and Structure • Maintain Solid Waste Environmental Compliance Documentation • Maintain Solid Waste Inventory Documentation			• Transferrable Resources from Solid Waste
			[4.3.1.4] **Maintain Qualified Solid Waste Staff** • Provide Training of Solid Waste Facility Staff • Maintain Qualification of Solid Waste Facility Staff • Maintain Solid Waste Staff Training Documentation		• Transferrable Resources from Solid Waste
				[4.3.1.5] **Assess Solid Waste Safety And Compliance State** • Support Independent Oversight Solid Waste Audits • Perform Solid Waste Management Assessments	• Solid Waste Generated During Solid Waste Cleanup Operations • Transferrable Resources from Solid Waste

Figure 2-18. Receive Solid Waste.

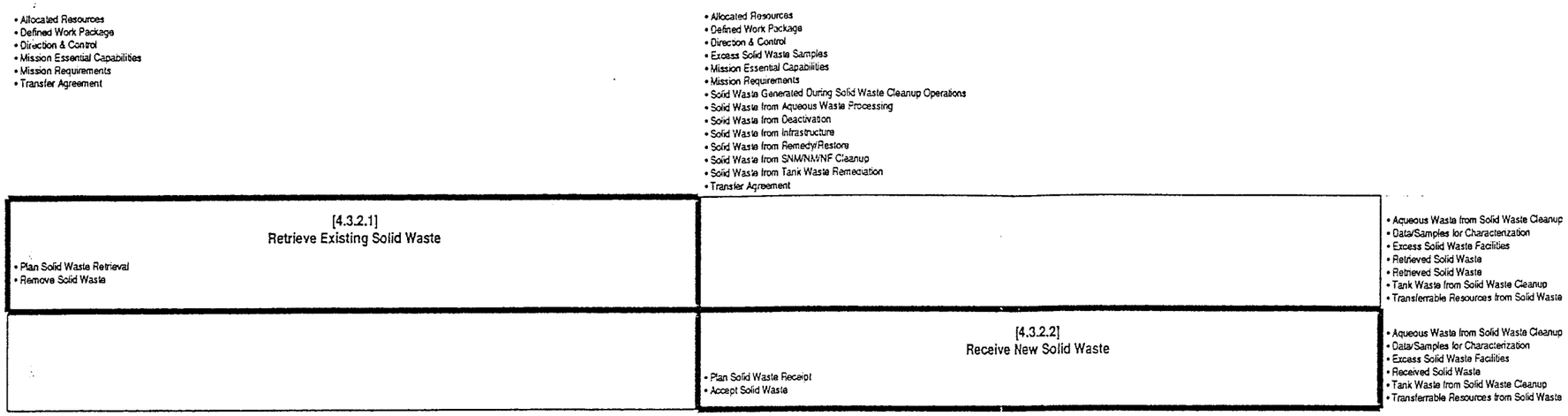


Figure 2-19. Characterize Solid Waste.

• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Transfer Agreement	• Allocated Resources • Data/Samples for Characterization • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Samples of Waste Requiring Additional Characterization • Transfer Agreement	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Transfer Agreement	
[4.3.3.1] Acquire Solid Waste Process Knowledge • Review Solid Waste Processing Records • Conduct Solid Waste Generator Interviews • Review Solid Waste Process Documentation • Review Submitted Solid Waste Documentation • Perform Solid Waste Safety Review				• Transferrable Resources from Solid Waste
	[4.3.3.2] Analyze Solid Waste Inventory • Receive Solid Waste Samples • Control Solid Waste Samples • Analyze Solid Waste Samples • Report Solid Waste Sample Characterization Information • Transfer Solid Waste Samples	• Solid Waste Samples		• Aqueous Waste from Solid Waste Cleanup • Excess Solid Waste Samples • Tank Waste from Solid Waste Cleanup • Transferrable Resources from Solid Waste
	• Solid Waste Archive Samples	[4.3.3.3] Archive Solid Waste Samples/Characterization Data • Archive Solid Waste Data • Archive Solid Waste Samples • Provide Solid Waste Sample and Data Retrievability		
			[4.3.3.4] Assess Solid Waste Characterization Information • Evaluate Solid Waste Characterization Data Against Requirements • Determine Additional Solid Waste Process Knowledge Needs • Validate Solid Waste Characterization Data	• Transferrable Resources from Solid Waste

Figure 2-20. Determine Solid Waste Disposition Requirements.

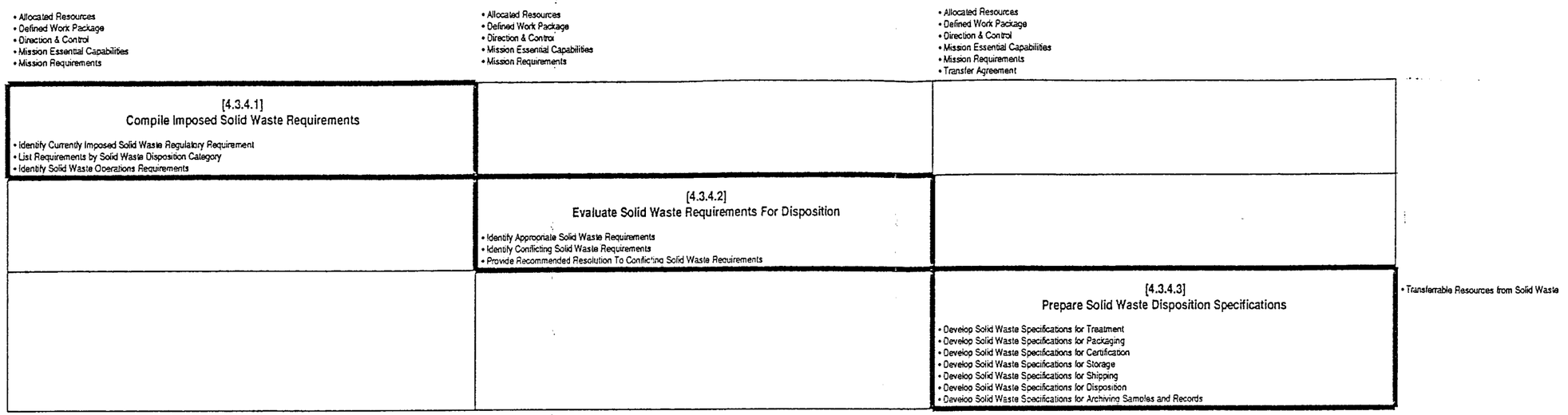


Figure 2-21. Disposition Solid Waste. (2 sheets)

• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Received Solid Waste	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Received Solid Waste	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Received Solid Waste • Transfer Agreement	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements	
[4.3.5.1] Treat Solid Waste • Receive Solid Waste for Treatment • Transport Solid Waste To Treatment Area • Process The Solid Waste • Immobilize Solid Waste • Stabilize Solid Waste • Neutralize Solid Waste	• Treated Solid Waste	• Quality Assurance Solid Waste Samples						• Aqueous Waste from Solid Waste Cleanup • Tank Waste from Solid Waste Cleanup
	[4.3.5.2] Package Solid Waste • Provide A Suitable Solid Waste Container • Containerize The Solid Waste • Provide Solid Waste Package Documentation • Label Containers Of Solid Waste • Inspect Containers Of Solid Waste	• Quality Assurance Solid Waste Samples	• Packaged Solid Waste					• Aqueous Waste from Solid Waste Cleanup • Tank Waste from Solid Waste Cleanup
		[4.3.5.3] Certify Solid Waste • Review Solid Waste Documentation • Analyze Solid Waste Treatment Process Samples • Accept/Reject/Correct Solid Waste Documentation • Accept/Reject the Solid Waste • Provide Solid Waste Certification Documentation • Release Solid Waste For Storage and Disposition • Release Solid Waste For Disposition					• Certified Solid Waste Data and Samples	• Aqueous Waste from Solid Waste Cleanup • Samples of Waste Requiring Additional Characterization • Tank Waste from Solid Waste Cleanup
			[4.3.5.4] Store Solid Waste • Accept Certified Solid Waste • Place Solid Waste In Storage • Provide Solid Waste Status Documentation • Monitor Solid Waste Package Quality • Release Stored Solid Waste For Disposition	• Off-site Certified Solid Waste	• On-site Certified Solid Waste			• Aqueous Waste from Solid Waste Cleanup • Tank Waste from Solid Waste Cleanup
				[4.3.5.5] Ship Solid Waste • Receive/Generate Request To Ship Solid Waste Offsite • Prepare Necessary Solid Waste Shipping Documentation • Prepare Necessary Solid Waste Shipping Packages • Inspect Solid Waste Shipment • Release Solid Waste For Shipment • Coordinate With Shipper For Offsite Solid Waste Shipment • Coordinate With Offsite Solid Waste Receiver • Verify Final Solid Waste Disposition				• Hazardous Waste • Processed Post-70 TRU/TRUM
					[4.3.5.6] Dispose Solid Waste • Prepare Solid Waste Disposal Documentation • Prepare Solid Waste Transport Packages • Schedule Solid Waste Disposal • Inspect Solid Waste Load • Place Solid Waste In Disposal Site • Close Solid Waste Disposal Site In Regulatory Compliance			• LLMW/LLW • RCRA Covered Trench
						[4.3.5.7] Assess Solid Waste TSD Capability Needs And Disposal Resources • Compare Design Throughput/Capacities Of Solid Waste TSD Facilities With Needs • Determine Adequacy Of Solid Waste TSD Facilities		• Excess Solid Waste Facilities • Transferable Resources from Solid Waste

Figure 2-21. Disposition Solid Waste. (2 sheets)

		• Certified Solid Waste Archive Data and Samples					[4.3.5.8] **Archive Solid Waste Process Samples and Records** • Archive Solid Waste Process Data • Archive Solid Waste Process Samples • Provide Solid Waste Process Sample and Data Retrievability

Figure 2-22. Remedy/Restore Sites, Facilities, & Groundwater.

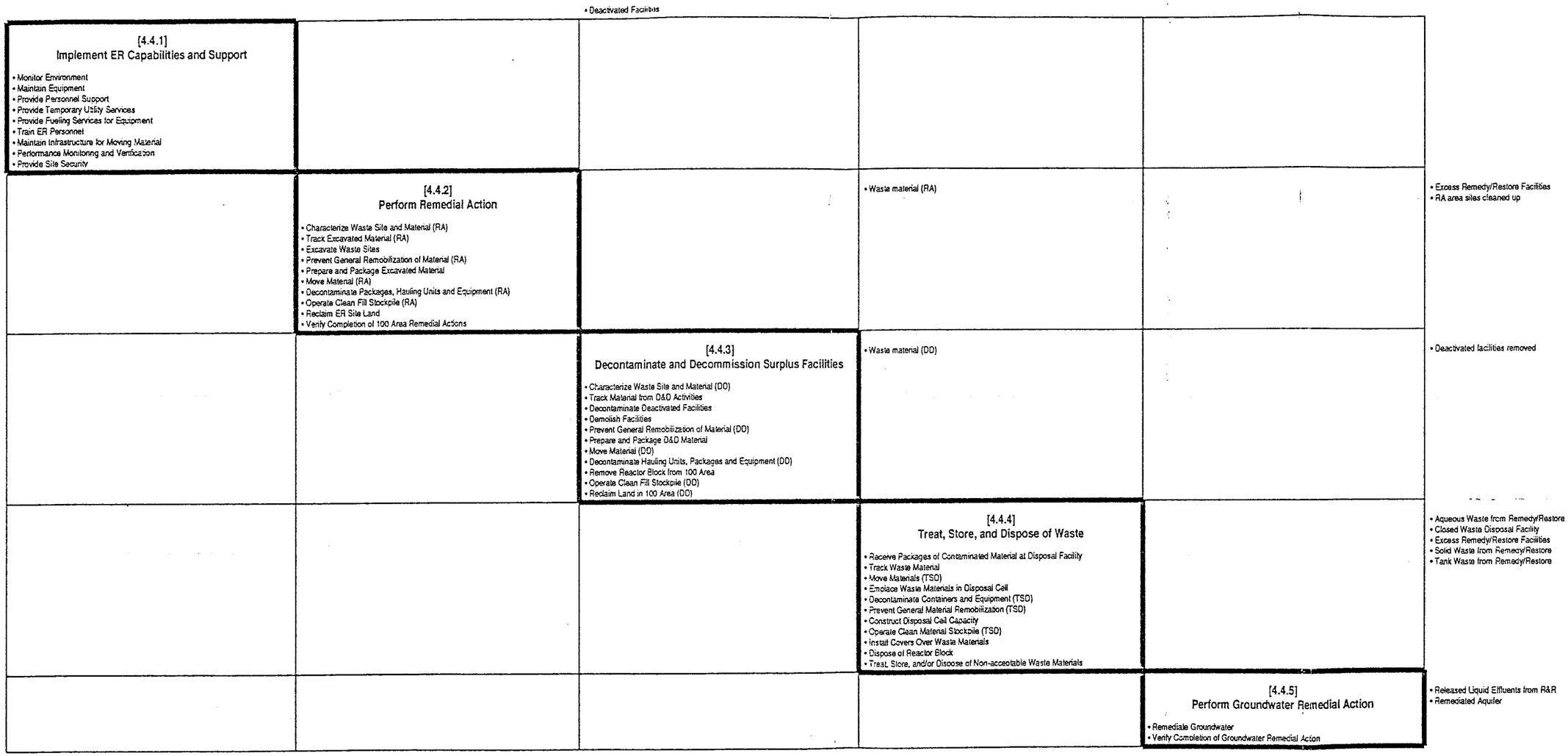


Figure 2-23. Manage Aqueous Wastes.

• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Transfer Agreement	• Allocated Resources • Aqueous Waste from Deactivation • Aqueous Waste from Infrastructure • Aqueous Waste from Remedy/Restore • Aqueous Waste from SNM/NM/NF Cleanup • Aqueous Waste from Solid Waste Cleanup • Aqueous Waste from Tank Waste Remediation • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements	
[4.5.1] **Maintain Aqueous Waste Safety and Compliance Envelope** • Maintain Safe And Compliant Aqueous Waste Operational Environment • Maintain Safe And Compliant Aqueous Waste System Equipment And Structure • Maintain Safe And Compliant Aqueous Waste Documentation • Maintain Qualified Aqueous Waste Staff • Assess Aqueous Waste Safety And Compliance State		• Liquid Wastes and Documentation Generated During AW Cleanup	• Solid Wastes and Documentation Generated During AW Cleanup		
	[4.5.2] **Develop Aqueous Waste Disposition Plan** • Profile Aqueous Waste to be Received • Assess Aqueous Waste Acceptance Capability • Determine Aqueous Waste Disposition and Needs				
		[4.5.3] **Receive/Transport Aqueous Waste** • Process Generator Aqueous Waste Transfer Request • Schedule Aqueous Waste Transfers • Transfer Aqueous Waste • Store Transferred Aqueous Waste	• Received Aqueous Waste and Documentation		• Excess Aqueous Waste Receive/Transport Facilities
			[4.5.4] **Treat Aqueous Waste** • Control Aqueous Waste Treatment Process • Perform Aqueous Waste Treatment • Collect and Evaluate Aqueous Waste Treatment Data	• Secondary Wastes And Documentation • Treated Effluent And Documentation	• Excess Aqueous Waste Treatment Facilities
		• Non-Compliant Effluent & Documentation		**[4.5.5]** **Disposition Aqueous Waste** • Document Disposition Compliance • Dispose of Waste (AW)	• Excess Aqueous Waste Disposition Facilities • Landfill Wastes • Landfill Wastes • Releasable Liquid from Aqueous Waste • Solid Waste from Aqueous Waste Processing • Tank Waste from Aqueous Waste Processing • Reusable Liquid from Aqueous Waste

Figure 2-24. Correct Unsafe Infrastructure Conditions.

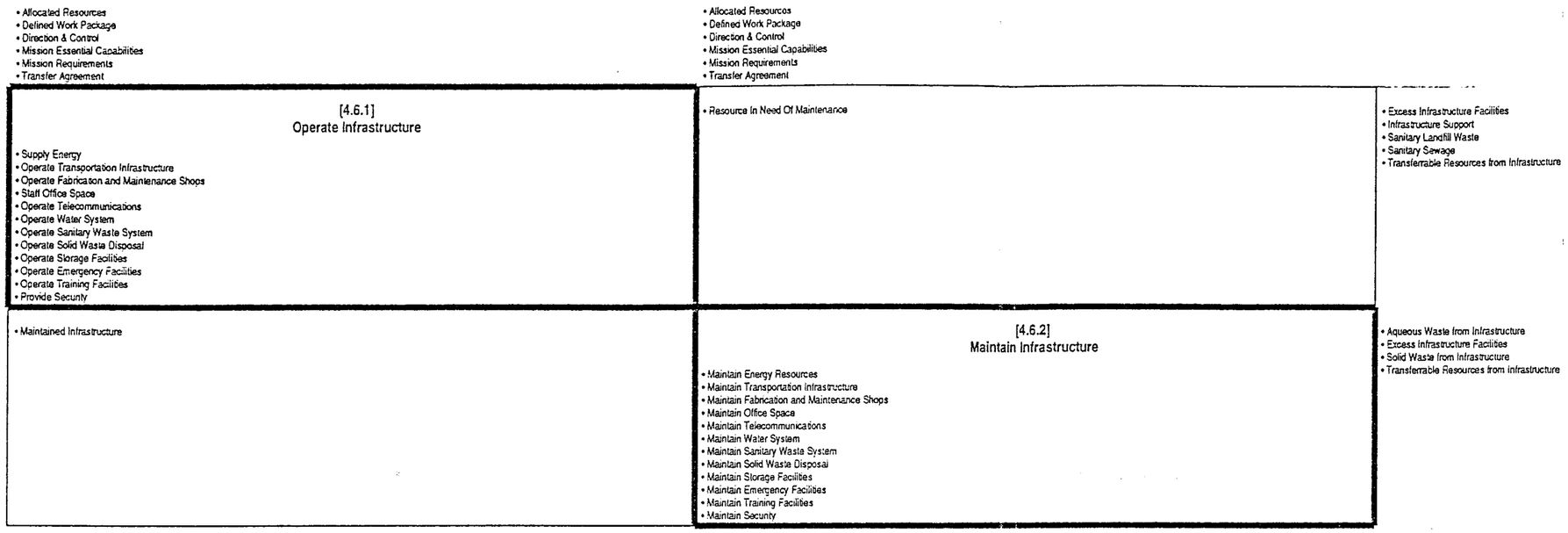
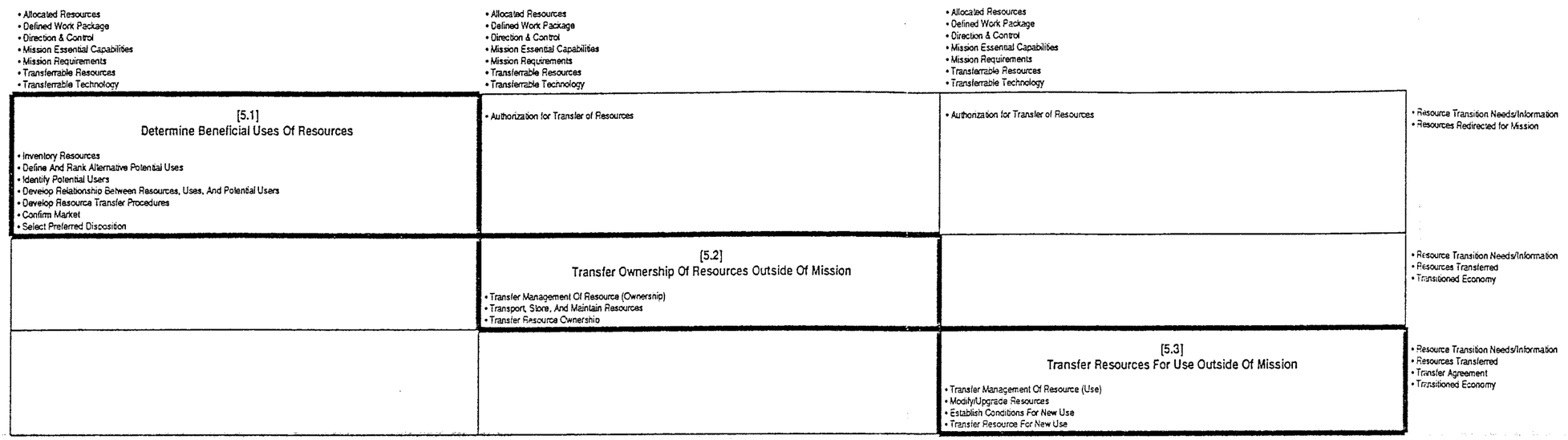


Figure 2-25. Store, Treat, and Disposition SNM/NM/NF Materials.

• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • SNM/NM/NF Recovered from Deactivation • Transfer Agreement	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements	• Allocated Resources • Defined Work Package • Direction & Control • Mission Essential Capabilities • Mission Requirements • Transfer Agreement	
[4.7.1] **Maintain Safety and Security Envelope (SNM/NM/NF)** • Maintain Safe and Compliant Operations (SNM/NM/NF) • Maintain Safe and Compliant Systems, Equipment, and Structure (SNM/NM/NF) • Maintain Safety and Compliance Documentation (SNM/NM/NF) • Maintain Qualified Facility Staff (SNM/NM/NF) • Assess Safety and Compliance State (SNM/NM/NF)					• Aqueous Waste from SNM/NM/NF Cleanup • Solid Waste from SNM/NM/NF Cleanup • Tank Waste from SNM/NM/NF Cleanup
	[4.7.2] **Control SNM, NM, and NF Functions** • Define Treat/Store/Disposition Operations • Negotiate Shipper/Receiver Agreement • Plan and Schedule Operations				
		[4.7.3] **Handle Incoming Materials** • Receive Shipment • Handle Shipping Containers • Handle Packages and Verify Material • Dispose of Incidental Waste (Shipping)	• Accepted Materials		• Aqueous Waste from SNM/NM/NF Cleanup • Excess SNM/NM/NF Facilities • Solid Waste from SNM/NM/NF Cleanup • Tank Waste from SNM/NM/NF Cleanup • Recycled Containers and Transporters
			[4.7.4] **Store Materials** • Stabilize for Storage • Store Stable Materials • Dispose of Incidental Waste (Storage)	• SNM/NM/NF Materials for Disposition	• Excess SNM/NM/NF Facilities
				[4.7.5] **Transfer Outgoing Materials for Disposition** • Prepare for Final Disposition • Transfer Dispositioned Materials • Dispose of Incidental Waste (Disposition)	• Aqueous Waste from SNM/NM/NF Cleanup • SNM/NM/NF Dispositioned Off Site • Solid Waste from SNM/NM/NF Cleanup • Tank Waste from SNM/NM/NF Cleanup • SNM/NM/NF Materials Transferred To Beneficial Uses

Figure 2-26. Transition Resources For Beneficial Use.



3.0 IDEFO/PRODUCT CROSS-REFERENCE

This section contains Table 3-1 that relates the outputs of functions from the IDEFO diagrams presented in the functional analysis to the products shown in Section 1 of this report. The first column contains the products from the IDEFO diagrams and the second column depicts the associated products from Section 1.

Table 3-1. IDEF0/Product Cross-Reference. (12 sheets)

IDEF0 Output	*Product*
AW Cleanup Waste Documentation	(not covered in this report)
Accepted Materials	• Accepted Materials
Acknowledged Unreconciled Differences	(not covered in this report)
Acutely Unsafe Conditions Action Information	(not covered in this report)
Acutely Unsafe Conditions Information	(not covered in this report)
Acutely Unsafe Corrective Action Plan	(not covered in this report)
Acutely Unsafe Disposition Conditions	(not covered in this report)
Acutely Unsafe Transfer Conditions	(not covered in this report)
Acutely Unsafe Treatment Conditions	(not covered in this report)
Additional Analysis/Process Knowledge Needs	(not covered in this report)
Allocated Resources	• Allocated Resources
Aqueous Waste Disposition Compliance Needs/Information	(not covered in this report)
Aqueous Waste Disposition Needs/Information	(not covered in this report)
Aqueous Waste Disposition Plan	(not covered in this report)
Aqueous Waste Receipt Authorization	(not covered in this report)
Aqueous Waste Receipt Needs/Info	(not covered in this report)
Aqueous Waste Remedy Needs/Information	(not covered in this report)
Aqueous Waste Safety and Compliance Constraints	(not covered in this report)
Aqueous Waste Treatment Needs/Info	(not covered in this report)
Assessed Solid Waste Capability Needs	(not covered in this report)
Authorization for Transfer of Resources	• Authorization for Transfer of Resources
Baseline Revision Needs	(not covered in this report)
Certified Solid Waste	• Off-site Certified Solid Waste • On-site Certified Solid Waste
Certified Solid Waste Archive Data and Samples	• Certified Solid Waste Archive Data and Samples
Certified Solid Waste Data and Samples	• Certified Solid Waste Data and Samples
Cesium/Strontium Capsules	• Cesium/Strontium Capsules

Table 3-1. IDEF0/Product Cross-Reference. (12 sheets)

IDEF0 Output	*Product*
Cesium/Strontium Capsules for Retrieval	• Cesium/Strontium Capsules for Retrieval
Cleaning Waste	• Cleaning Waste
Cleanup Program Information	• Cleanup Program Information
Closed ILLW Sites	• Closed ILLW Sites
Closed Waste Disposal Facility	• Closed Waste Disposal Facility
Closure-Ready DSTs	• Closure-Ready DSTs
Closure-Ready SSTs	• Closure-Ready SSTs
Concentrate Waste Feed	• Concentrate Waste Feed
Conditioned Waste for Sampling	• Conditioned Waste for Sampling
Current Year Work Plan	(not covered in this report)
Data/Samples for Characterization	• Data/Samples for Characterization
Deactivated facilities removed	• Deactivated facilities removed
Deactivation Plan	(not covered in this report)
Deactivation Safety Envelope Constraints	(not covered in this report)
Defined Baseline Information	(not covered in this report)
Defined Work Package	• Defined Work Package
Direction & Control	• Direction & Control
Dispositioned Gaseous Effluent	• Dispositioned Gaseous Effluent
Dispositioned Legacy	• Released Effluents • Waste/Materials Dispositioned Off-Site • Waste/Materials Dispositioned On-Site
Dispositioned Liquid Effluent	• Dispositioned Liquid Effluent

Table 3-1. IDEF0/Product Cross-Reference. (12 sheets)

IDEF0 Output	*Product*
Dispositioned Sites, Facilities, & Ground Water	• Closed Waste Disposal Facility • Released Liquid Effluents from R&R
Dispositioned Solid Waste	• Hazardous Waste • LLMW/LLW • Processed Post-70 TRU/TRUM • RCRA Covered Trench
Dispositioned Solid Waste (TWRS)	• Dispositioned Solid Waste (TWRS)
Effective Management System	• Effective Management System
Enhanced Local Economy	• Enhanced Local Economy
Excess Aqueous Waste Disposition Facilities	• Excess Aqueous Waste Disposition Facilities
Excess Aqueous Waste Facilities	• Excess Aqueous Waste Facilities
Excess Aqueous Waste Receive/Transport Facilities	• Excess Aqueous Waste Receive/Transport Facilities
Excess Aqueous Waste Treatment Facilities	• Excess Aqueous Waste Treatment Facilities
Excess Facilities from DRM	• Excess Facilities from DRM
Excess Facilities from ILLW	• Excess Facilities from ILLW
Excess Facilities from MTW	• Excess Facilities from MTW
Excess Facilities from PW	• Excess Facilities from PW
Excess Facilities, Equipment & Materials	(not covered in this report)
Excess Infrastructure Facilities	• Excess Infrastructure Facilities
Excess Land Transferred	• Resources Transferred
Excess Remedy/Restore Facilities	• Excess Remedy/Restore Facilities
Excess Solid Waste Facilities	• Excess Solid Waste Facilities

Table 3-1. IDEF0/Product Cross-Reference. (12 sheets)

IDEF0 Output	*Product*
Excess Solid Waste Samples	• Excess Solid Waste Samples
Excess Storage Facilities	• Excess SNM/NM/NF Facilities
Excess Tank Waste Facilities	• Excess Tank Waste Facilities
Facilities Transfered to D&D	• Deactivated Facilities
Facilities/Resources Transferred To Beneficial Uses	• Transferrable Resources from Deactivation
Facility Deactivation Needs/Information	(not covered in this report)
Facility Deactivation Status Information	(not covered in this report)
Gaseous Effluent from DEF	• Gaseous Effluent from DEF
Gaseous Effluent from DLE	• Gaseous Effluent from DLE
Gaseous Effluent from DRM	• Gaseous Effluent from DRM
Gaseous Effluent from DSW	• Gaseous Effluent from DSW
Gaseous Waste from ILLW	• Gaseous Waste from ILLW
ID Key Issues For PI	• ID Key Issues For PI
IHLW for Storage	• IHLW for Storage
ITRU Waste for Storage	• ITRU Waste for Storage
Identification of Potentially Transferrable Resources	(not covered in this report)
Immobilized HLW	• Immobilized HLW
Immobilized TRU Waste	• Immobilized TRU Waste
In-Process Waste	• In-Process Waste
Incoming Shipment Authorization	(not covered in this report)
Institutional Information	• Institutional Information

Table 3-1. IDEF0/Product Cross-Reference. (12 sheets)

IDEF0 Output	*Product*
Laboratory Waste from Characterization	• Laboratory Waste from Characterization
Landfill Wastes	• Landfill Wastes
Less Dependent Local Economy	• Less Dependent Local Economy
Liquid Effluent from DEF	• Liquid Effluent from DEF
Liquid Effluent from DGE	• Liquid Effluent from DGE
Liquid Effluent from DRM	• Liquid Effluent from DRM
Liquid Effluent from ILLW	• Liquid Effluent from ILLW
Liquid SW for Storage	• Liquid SW for Storage
Liquid Wastes and Documentation Generated During AW Cleanup	• Liquid Wastes and Documentation Generated During AW Cleanup
List of Resources Transferred Outside of Mission	(not covered in this report)
Low Level SW	• Low Level SW
MTW SG Gaseous Waste	• MTW SG Gaseous Waste
MTW SG Liquid Effluent	• MTW SG Liquid Effluent
MTW SG Solid Waste	• MTW SG Solid Waste
MTW SGW & EF	• MTW SGW & EF
Management System Revision Needs	(not covered in this report)
Mission Essential Capabilities	• Mission Essential Capabilities
Mission Essential Capability Needs/Information	(not covered in this report)
Mission Requirements	• Mission Requirements
Non-Aqueous Wastes Generated During Cleanup	• Solid Waste from Aqueous Waste Processing • Tank Waste from Aqueous Waste Processing

Table 3-1. IDEF0/Product Cross-Reference. (12 sheets)

IDEF0 Output	*Product*
Non-Compliant Effluent & Documentation	• Non-Compliant Effluent & Documentation
Non-Issue Information	• Non-Issue Information
Non-Solid Wastes Generated During Cleanup Operations	• Aqueous Waste from Solid Waste Cleanup • Tank Waste from Solid Waste Cleanup
Non-Tank Wastes Generated During Cleanup Operations	• Aqueous Waste from Tank Waste Remediation • Solid Waste from Tank Waste Remediation
Nuclear Materials Transferred to Solid Waste	(not covered in this report)
Nuclear Materials Transferred to Tank Waste	(not covered in this report)
Off-site Certified Solid Waste	• Off-site Certified Solid Waste
On-Site Nuclear Materials	• SNM/NM/NF Recovered from Deactivation
On-site Certified Solid Waste	• On-site Certified Solid Waste
Operations & Capability Needs	(not covered in this report)
Operations Plan	(not covered in this report)
Outgoing Shipment Authorization	(not covered in this report)
OverPacked Capsules	• OverPacked Capsules
Overpacked Cs/Sr Capsules for Storage/Disposal	• Overpacked Cs/Sr Capsules for Storage/Disposal
PW SG Gaseous Waste	• PW SG Gaseous Waste
PW SG Liquid Effluent	• PW SG Liquid Effluent
PW SG Solid Waste	• PW SG Solid Waste
PW SGW & EF	• PW SGW & EF
Packaged Solid Waste	• Packaged Solid Waste
Plans & Activities Accepted By Public	(not covered in this report)
Pretreated HLW for Immobilization	• Pretreated HLW for Immobilization

Table 3-1. IDEF0/Product Cross-Reference. (12 sheets)

IDEF0 Output	*Product*
Pretreated LLW for Immobilization	• Pretreated LLW for Immobilization
Pretreated TRU Waste for Immobilization	• Pretreated TRU Waste for Immobilization
Program Variances	(not covered in this report)
Public Acceptance	• Public Acceptance
Public Group Specific PI Plan	• Public Group Specific PI Plan
Public Information	• Public Information
Public Needs/Information	• Public Needs/Information
Public Values	• Public Values
Qualified AW Staff	(not covered in this report)
Quality Assurance Solid Waste Samples	• Quality Assurance Solid Waste Samples
RA area sites cleaned up	• RA area sites cleaned up
Received Aqueous Waste and Documentation	• Received Aqueous Waste and Documentation
Received Solid Waste	• Received Solid Waste
Recommended Changes	(not covered in this report)
Recommended Requirement Resolutions	(not covered in this report)
Recycled Containers and Transporters	• Recycled Containers and Transporters
Releasable Effluents	• Releasable Liquid from Aqueous Waste
Released Liquid Effluents from R&R	• Released Liquid Effluents from R&R
Remediated Aquifer	• Remediated Aquifer
Remedy Needs/Information	(not covered in this report)
Requirements Requiring Reconciliation	(not covered in this report)

Table 3-1. IDEF0/Product Cross-Reference. (12 sheets)

IDEF0 Output	*Product*
Resource Transition Needs/Information	• Resource Transition Needs/Information
Resources Redirected for Mission	• Resources Redirected for Mission
Restoration Needs/Information	(not covered in this report)
Retrieved Cesium/Strontium Capsules	• Retrieved Cesium/Strontium Capsules
Retrieved Solid Waste	• Retrieved Solid Waste
Retrieved Tank Waste	• Retrieved Tank Waste
Reusable Facilities	• Reusable Facilities
Reusable Liquid from DLE	• Reusable Liquid from DLE
Reusable Materials for MSGW & EF	• Reusable Materials for MSGW & EF
Reusable Materials for MTW	• Reusable Materials for MTW
Reusable Materials for PW	• Reusable Materials for PW
Reusable Materials for Site	• Reusable Materials for Site
Reusable Solids from DSW	• Reusable Solids from DSW
Reuseable Effluents	• Reusable Liquid from Aqueous Waste
SNM/NM/NF Container Handling Needs/Information	(not covered in this report)
SNM/NM/NF Disposition Treatment Information	(not covered in this report)
SNM/NM/NF Materials Transferred To Beneficial Uses	• SNM/NM/NF Materials Transferred To Beneficial Uses
SNM/NM/NF Materials for Disposition	• SNM/NM/NF Materials for Disposition
SNM/NM/NF Needs/Information	(not covered in this report)
SNM/NM/NF Storage Needs/Information	(not covered in this report)
SNM/NM/NF Storage Treatment Information	(not covered in this report)
SNM/NM/NF Transfer Needs/Information	(not covered in this report)

Table 3-1. IDEF0/Product Cross-Reference. (12 sheets)

IDEF0 Output	*Product*
SW for Processing	• SW for Processing
SW from Immobilize & Dispose LLW	• SW from Immobilize & Dispose LLW
Safe Legacy Infrastructure Conditions	(not covered in this report)
Safety and Security Envelope Constraints	(not covered in this report)
Safety and Security Needs/Information	(not covered in this report)
Samples of Waste Requiring Additional Characterization	• Samples of Waste Requiring Additional Characterization
Sanitary Solid Waste	(not covered in this report)
Secondary Wastes And Documentation	• Secondary Wastes And Documentation
Solid Waste Analysis Information	(not covered in this report)
Solid Waste Archive Data	(not covered in this report)
Solid Waste Archive Samples	• Solid Waste Archive Samples
Solid Waste Archive Specifications	(not covered in this report)
Solid Waste Capability Needs	(not covered in this report)
Solid Waste Characterization Information	(not covered in this report)
Solid Waste Corrective Action Needs	(not covered in this report)
Solid Waste Disposition Capability Needs	(not covered in this report)
Solid Waste Disposition Requirements	(not covered in this report)
Solid Waste Disposition Requirements List	(not covered in this report)
Solid Waste Disposition Specifications	(not covered in this report)
Solid Waste Documentation	(not covered in this report)
Solid Waste Equipment and Structure Information	(not covered in this report)
Solid Waste Generated Cleaning Up Aqueous Waste	(not covered in this report)
Solid Waste Generated During Solid Waste Cleanup Operations	• Solid Waste Generated During Solid Waste Cleanup Operations
Solid Waste Internal Safety Operations Constraint Documents	(not covered in this report)
Solid Waste Operations & Maintenance Work Package	(not covered in this report)
Solid Waste Operations Information	(not covered in this report)
Solid Waste Process Knowledge	(not covered in this report)

Table 3-1. IDEF0/Product Cross-Reference. (12 sheets)

IDEF0 Output	*Product*
Solid Waste Process Quality Data	(not covered in this report)
Solid Waste Qualified Staff	(not covered in this report)
Solid Waste Remedy Needs/Information	(not covered in this report)
Solid Waste Safety/Compliance Envelope Constraints	(not covered in this report)
Solid Waste Samples	• Solid Waste Samples
Solid Waste from DEF	• Solid Waste from DEF
Solid Waste from DGE	• Solid Waste from DGE
Solid Waste from DLE	• Solid Waste from DLE
Solid Waste from DRM	• Solid Waste from DRM
Solid Waste from ILLW	• Solid Waste from ILLW
Solid Waste from Tank Waste Remediation	• Solid Waste from Tank Waste Remediation
Solid Wastes and Documentation Generated During AW Cleanup	• Solid Wastes and Documentation Generated During AW Cleanup
System Architecture	• System Architecture
System Functional Definition	• System Functional Definition
System Requirements	• System Requirements
Tank Waste Generated Cleaning Up Aqueous Waste	(not covered in this report)
Tank Waste Remedy Needs/Information	(not covered in this report)
Tank Waste for Pretreatment	• Tank Waste for Pretreatment
Tank Waste for Retrieval	• Tank Waste for Retrieval
Tank Waste for Sampling	• Tank Waste for Sampling
Transfer Agreement	• Transfer Agreement

Table 3-1. IDEF0/Product Cross-Reference . (12 sheets)

IDEF0 Output	*Product*
Transferrable Resources	• Transferrable Resources
Transferrable Technology	• Transferrable Technology
Transitioned Economy	• Transitioned Economy
Treated Effluent And Documentation	• Treated Effluent And Documentation
Treated Solid Waste	• Treated Solid Waste
Undocumented Wastes Information	(not covered in this report)
Unsafe Infrastructure Needs/Information	(not covered in this report)
Value Differences Defined	(not covered in this report)
Waste Concentrate	• Waste Concentrate
Waste Concentrate for Sampling	• Waste Concentrate for Sampling
Waste Concentration Feed for Sampling	• Waste Concentration Feed for Sampling
Waste Disposition Status Information	(not covered in this report)
Waste Generated Correcting Unsafe Infrastructure	• Aqueous Waste from Infrastructure • Sanitary Landfill Waste • Sanitary Sewage • Solid Waste from Infrastructure
Waste Generated Handling SNM/NM/NF	• Aqueous Waste from SNM/NM/NF Cleanup • Solid Waste from SNM/NM/NF Cleanup • Tank Waste from SNM/NM/NF Cleanup
Waste material (DD)	• Waste material (DD)
Waste material (RA)	• Waste material (RA)
Waste to Storage	• Waste to Storage
Wastes Generated During Deactivation	• Aqueous Waste from Deactivation

Table 3-1. IDEF0/Product Cross-Reference. (12 sheets)

IDEF0 Output	*Product*
Wastes Generated During Remedy/Restore	• Aqueous Waste from Remedy/Restore • Solid Waste from Remedy/Restore • Tank Waste from Remedy/Restore
Wastes and Documentation Generated During AW Cleanup	• Liquid Wastes and Documentation Generated During AW Cleanup • Solid Wastes and Documentation Generated During AW Cleanup

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4.0 PRODUCT/IDEFO CROSS-REFERENCE

This section contains Table 4-1 that relates the products shown in Section 1 to outputs of functions from the IDEFO diagrams presented in the functional analysis. The first column contains the products from Section 1 and the second column depicts the associated products contained in the IDEFO diagrams. In some cases, there are products shown in the first column, but no associated products in the second column. In these cases, specific function outputs were determined to be missing from the functional analysis and have been added as products in Section 1 of this report. In these cases, the added products will be reflected when the second issue of the functional analysis is published.

Table 4-1. Product/IDEF0 Cross-Reference. (10 sheets)

Product	*IDEF0 Output*
Accepted Materials	• Accepted Materials
Allocated Resources	• Allocated Resources
Aqueous Waste from Deactivation	• Solid Waste Generated During Deactivation • Tank Waste Generated During Deactivation • Wastes Generated During Deactivation
Aqueous Waste from Deactivation (Type 1)	(derived from architecture synthesis)
Aqueous Waste from Deactivation (Type 2)	(derived from architecture synthesis)
Aqueous Waste from Deactivation (Type 3)	(derived from architecture synthesis)
Aqueous Waste from Infrastructure	• Waste Generated Correcting Unsafe Infrastructure
Aqueous Waste from Remedy/Restore	• Wastes Generated During Remedy/Restore
Aqueous Waste from SNM/NM/NF Cleanup	• Waste Generated Handling SNM/NM/NF
Aqueous Waste from Solid Waste Cleanup	• Non-Solid Wastes Generated During Cleanup Operations
Aqueous Waste from Tank Waste Remediation	• Non-Tank Wastes Generated During Cleanup Operations • Solid Waste from Tank Waste Remediation
Authorization for Transfer of Resources	• Authorization for Transfer of Resources
Certified Solid Waste Archive Data and Samples	• Certified Solid Waste Archive Data and Samples
Certified Solid Waste Data and Samples	• Certified Solid Waste Data and Samples
Cesium/Strontium Capsules	• Cesium/Strontium Capsules
Cesium/Strontium Capsules for Retrieval	• Cesium/Strontium Capsules for Retrieval
Cleaning Waste	• Cleaning Waste
Cleanup Program Information	• Cleanup Program Information
Closed ILLW Sites	• Closed ILLW Sites

Table 4-1. Product/IDEF0 Cross-Reference. (10 sheets)

Product	*IDEF0 Output*
Closed Waste Disposal Facility	• Closed Waste Disposal Facility
Closure-Ready DSTs	• Closure-Ready DSTs
Closure-Ready SSTs	• Closure-Ready SSTs
Concentrate Waste Feed	• Concentrate Waste Feed
Conditioned Waste for Sampling	• Conditioned Waste for Sampling
Data/Samples for Characterization	• Data/Samples for Characterization
Deactivated Facilities	• Facilities Transfered to D&D
Deactivated Type 3 Facility	(derived from architecture synthesis)
Deactivated Type 4 Facility	(derived from architecture synthesis)
Deactivated facilities removed	• Deactivated facilities removed
Defined Work Package	• Defined Work Package
Direction & Control	• Direction & Control
Dispositioned Gaseous Effluent	• Dispositioned Gaseous Effluent
Dispositioned Liquid Effluent	• Dispositioned Liquid Effluent
Dispositioned Solid Waste (TWRS)	• Dispositioned Solid Waste (TWRS)
Effective Management System	• Effective Management System
Enhanced Local Economy	• Enhanced Local Economy
Excess Aqueous Waste Disposition Facilities	• Excess Aqueous Waste Disposition Facilities
Excess Aqueous Waste Facilities	• Excess Aqueous Waste Facilities
Excess Aqueous Waste Receive/Transport Facilities	• Excess Aqueous Waste Receive/Transport Facilities

Table 4-1. Product/IDEF0 Cross-Reference. (10 sheets)

Product	*IDEF0 Output*
Excess Aqueous Waste Treatment Facilities	• Excess Aqueous Waste Treatment Facilities
Excess Facilities from DRM	• Excess Facilities from DRM
Excess Facilities from ILLW	• Excess Facilities from ILLW
Excess Facilities from MTW	• Excess Facilities from MTW
Excess Facilities from PW	• Excess Facilities from PW
Excess Infrastructure Facilities	• Excess Infrastructure Facilities
Excess Remedy/Restore Facilities	• Excess Remedy/Restore Facilities
Excess SNM/NM/NF Facilities	• Excess Storage Facilities
Excess Solid Waste Facilities	• Excess Solid Waste Facilities
Excess Solid Waste Samples	• Excess Solid Waste Samples
Excess Tank Waste Facilities	• Excess Tank Waste Facilities
Gaseous Effluent from DEF	• Gaseous Effluent from DEF
Gaseous Effluent from DLE	• Gaseous Effluent from DLE
Gaseous Effluent from DRM	• Gaseous Effluent from DRM
Gaseous Effluent from DSW	• Gaseous Effluent from DSW
Gaseous Waste from ILLW	• Gaseous Waste from ILLW
Hazardous Waste	• Dispositioned Solid Waste
ID Key Issues For PI	• ID Key Issues For PI
IHLW for Storage	• IHLW for Storage

Table 4-1. Product/IDEF0 Cross-Reference. (10 sheets)

Product	*IDEF0 Output*
ITRU Waste for Storage	• ITRU Waste for Storage
Immobilized HLW	• Immobilized HLW
Immobilized TRU Waste	• Immobilized TRU Waste
In-Process Waste	• In-Process Waste
Infrastructure Support	(derived from architecture synthesis)
Institutional Information	• Institutional Information
LLMW/LLW	• Dispositioned Solid Waste
Laboratory Waste from Characterization	• Laboratory Waste from Characterization
Landfill Wastes	• Landfill Wastes
Less Dependent Local Economy	• Less Dependent Local Economy
Liquid Effluent from DEF	• Liquid Effluent from DEF
Liquid Effluent from DGE	• Liquid Effluent from DGE
Liquid Effluent from DRM	• Liquid Effluent from DRM
Liquid Effluent from ILLW	• Liquid Effluent from ILLW
Liquid SW for Storage	• Liquid SW for Storage
Liquid Wastes and Documentation Generated During AW Cleanup	• Liquid Wastes and Documentation Generated During AW Cleanup
Low Level SW	• Low Level SW
MTW SG Gaseous Waste	• MTW SG Gaseous Waste
MTW SG Liquid Effluent	• MTW SG Liquid Effluent

Table 4-1. Product/IDEF0 Cross-Reference. (10 sheets)

Product	*IDEF0 Output*
MTW SG Solid Waste	• MTW SG Solid Waste
MTW SGW & EF	• MTW SGW & EF
Mission Essential Capabilities	• Mission Essential Capabilities
Mission Requirements	• Mission Requirements
Non-Compliant Effluent & Documentation	• Non-Compliant Effluent & Documentation
Non-Issue Information	• Non-Issue Information
Off-site Certified Solid Waste	• Off-site Certified Solid Waste
On-site Certified Solid Waste	• On-site Certified Solid Waste
OverPacked Capsules	• OverPacked Capsules
Overpacked Cs/Sr Capsules for Storage/Disposal	• Overpacked Cs/Sr Capsules for Storage/Disposal
PW SG Gaseous Waste	• PW SG Gaseous Waste
PW SG Liquid Effluent	• PW SG Liquid Effluent
PW SG Solid Waste	• PW SG Solid Waste
PW SGW & EF	• PW SGW & EF
Packaged Solid Waste	• Packaged Solid Waste
Pretreated HLW for Immobilization	• Pretreated HLW for Immobilization
Pretreated LLW for Immobilization	• Pretreated LLW for Immobilization
Pretreated TRU Waste for Immobilization	• Pretreated TRU Waste for Immobilization
Processed Post-70 TRU/TRUM	• Dispositioned Solid Waste

Table 4-1. Product/IDEF0 Cross-Reference. (10 sheets)

Product	*IDEF0 Output*
Public Acceptance	• Public Acceptance
Public Group Specific PI Plan	• Public Group Specific PI Plan
Public Information	• Public Information
Public Needs/Information	• Public Needs/Information
Public Values	• Public Values
Quality Assurance Solid Waste Samples	• Quality Assurance Solid Waste Samples
RA area sites cleaned up	• RA area sites cleaned up
RCRA Covered Trench	• Dispositioned Solid Waste
Received Aqueous Waste and Documentation	• Received Aqueous Waste and Documentation
Received Solid Waste	• Received Solid Waste
Recycled Containers and Transporters	• Recycled Containers and Transporters
Releasable Liquid from Aqueous Waste	• Releasable Effluents
Released Effluents	• Dispositioned Legacy
Released Gaseous Effluents	(derived from architecture synthesis)
Released Liquid Effluents	(derived from architecture synthesis)
Released Liquid Effluents from R&R	• Released Liquid Effluents from R&R
Remediated Aquifer	• Remediated Aquifer
Resource Transition Needs/Information	• Resource Transition Needs/Information
Resources Redirected for Mission	• Resources Redirected for Mission
Resources Transferred	• Excess Land Transferred

Table 4-1. Product/IDEF0 Cross-Reference. (10 sheets)

Product	*IDEF0 Output*
Retrieved Cesium/Strontium Capsules	• Retrieved Cesium/Strontium Capsules
Retrieved Solid Waste	• Retrieved Solid Waste
Retrieved Tank Waste	• Retrieved Tank Waste
Reusable Facilities	• Reusable Facilities
Reusable Liquid from Aqueous Waste	• Reuseable Effluents
Reusable Liquid from DLE	• Reusable Liquid from DLE
Reusable Materials for MSGW & EF	• Reusable Materials for MSGW & EF
Reusable Materials for MTW	• Reusable Materials for MTW
Reusable Materials for PW	• Reusable Materials for PW
Reusable Materials for Site	• Reusable Materials for Site
Reusable Solids from DSW	• Reusable Solids from DSW
SNM/NM/NF Dispositioned Off Site	(derived from architecture synthesis)
SNM/NM/NF Materials Transferred To Beneficial Uses	• SNM/NM/NF Materials Transferred To Beneficial Uses
SNM/NM/NF Materials for Disposition	• SNM/NM/NF Materials for Disposition
SNM/NM/NF Recovered from Deactivation	• On-Site Nuclear Materials
SW for Processing	• SW for Processing
SW from Immobilize & Dispose LLW	• SW from Immobilize & Dispose LLW
Safe and Compliant Resources (Type 1)	(derived from architecture synthesis)
Safe and Compliant Resources (Type 2)	(derived from architecture synthesis)
Safe and Compliant Resources (Type 3)	(derived from architecture synthesis)
Safe and Compliant Resources (Type 4)	(derived from architecture synthesis)

Table 4-1. Product/IDEF0 Cross-Reference. (10 sheets)

Product	*IDEF0 Output*
Samples of Waste Requiring Additional Characterization	• Samples of Waste Requiring Additional Characterization
Sanitary Landfill Waste	• Waste Generated Correcting Unsafe Infrastructure
Sanitary Sewage	• Waste Generated Correcting Unsafe Infrastructure
Secondary Wastes And Documentation	• Secondary Wastes And Documentation
Solid Waste Archive Samples	• Solid Waste Archive Samples
Solid Waste Generated During Solid Waste Cleanup Operations	• Solid Waste Generated During Solid Waste Cleanup Operations
Solid Waste Samples	• Solid Waste Samples
Solid Waste from Aqueous Waste Processing	• Non-Aqueous Wastes Generated During Cleanup
Solid Waste from DEF	• Solid Waste from DEF
Solid Waste from DGE	• Solid Waste from DGE
Solid Waste from DLE	• Solid Waste from DLE
Solid Waste from DRM	• Solid Waste from DRM
Solid Waste from Deactivation	(derived from architecture synthesis)
Solid Waste from Deactivation (Type 1)	(derived from architecture synthesis)
Solid Waste from Deactivation (Type 2)	(derived from architecture synthesis)
Solid Waste from Deactivation (Type 3)	(derived from architecture synthesis)
Solid Waste from ILLW	• Solid Waste from ILLW
Solid Waste from Infrastructure	• Waste Generated Correcting Unsafe Infrastructure
Solid Waste from Remedy/Restore	• Wastes Generated During Remedy/Restore
Solid Waste from SNM/NM/NF Cleanup	• Waste Generated Handling SNM/NM/NF

Table 4-1. Product/IDEF0 Cross-Reference. (10 sheets)

Product	*IDEF0 Output*
Solid Waste from Tank Waste Remediation	• Solid Waste from Tank Waste Remediation
Solid Wastes and Documentation Generated During AW Cleanup	• Solid Wastes and Documentation Generated During AW Cleanup
Stabilized Type 1 Facility	(derived from architecture synthesis)
Stabilized Type 2 Facility	(derived from architecture synthesis)
Stabilized Type 3 Facility	(derived from architecture synthesis)
System Architecture	• System Architecture
System Functional Definition	• System Functional Definition
System Requirements	• System Requirements
Tank Waste for Pretreatment	• Tank Waste for Pretreatment
Tank Waste for Retrieval	• Tank Waste for Retrieval
Tank Waste for Sampling	• Tank Waste for Sampling
Tank Waste from Aqueous Waste Processing	• Non-Aqueous Wastes Generated During Cleanup
Tank Waste from Deactivation	(derived from architecture synthesis)
Tank Waste from Deactivation (Type 1)	(derived from architecture synthesis)
Tank Waste from Deactivation (Type 2)	(derived from architecture synthesis)
Tank Waste from Remedy/Restore	• Wastes Generated During Remedy/Restore
Tank Waste from SNM/NM/NF Cleanup	• Waste Generated Handling SNM/NM/NF
Tank Waste from Solid Waste Cleanup	• Non-Solid Wastes Generated During Cleanup Operations
Transfer Agreement	• Transfer Agreement
Transferrable Resources	• Transferrable Resources
Transferrable Resources from Aqueous Waste	(derived from architecture synthesis)

Table 4-1. Product/IDEF0 Cross-Reference. (10 sheets)

Product	*IDEF0 Output*
Transferrable Resources from Deactivation	• Facilities/Resources Transferred To Beneficial Uses
Transferrable Resources from Infrastructure	(derived from architecture synthesis)
Transferrable Resources from Remedy/Restore	(derived from architecture synthesis)
Transferrable Resources from SNM/NM/NF Cleanup	(derived from architecture synthesis)
Transferrable Resources from Solid Waste	(derived from architecture synthesis)
Transferrable Resources from Tank Waste Remediation	(derived from architecture synthesis)
Transferrable Technology	• Transferrable Technology
Transitioned Economy	• Transitioned Economy
Treated Effluent And Documentation	• Treated Effluent And Documentation
Treated Solid Waste	• Treated Solid Waste
Waste Concentrate	• Waste Concentrate
Waste Concentrate for Sampling	• Waste Concentrate for Sampling
Waste Concentration Feed for Sampling	• Waste Concentration Feed for Sampling
Waste material (DD)	• Waste material (DD)
Waste material (RA)	• Waste material (RA)
Waste to Storage	• Waste to Storage
Waste/Materials Dispositioned Off-Site	• Dispositioned Legacy
Waste/Materials Dispositioned On-Site	• Dispositioned Legacy

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5.0 SOURCE/DESTINATION FUNCTION IDENTIFICATION

This section contains Table 5-1 that lists function titles used in this report indexed by their function number. The first column contains the function number as used in the "Source/Destination Function(s)" column of the tables in Section 1 and the second column contains the title of the function. These function numbers and titles are the same as those contained in the functional analysis and architecture synthesis.

Table 5-1. Source/Destination Function Identification . (4 sheets)

Number	*Title*
0	Clean Up Hanford
1	Manage Program
1.1	Establish Management System
1.2	Perform Systems Engineering
1.3	Formulate Program
1.4	Direct Program
1.5	Evaluate Program
1.6	ENSURE REGULATORY COMPLIANCE
2	Acquire Mission Essential Capabilities
3	Obtain Public Acceptance
3.1	Identify Issues
3.2	Identify Information Needs For Public Groups
3.3	Develop Understanding Of Public/Mission Differences
3.4	Reconcile Differences
4	Remedy Unsafe And Unacceptable Conditions
4.1	Deactivate Facilities
4.1.1	Deactivate Facilities With Special Nuclear Materials & Nuclear Materials (Type 1 Fclty)
4.1.1.1	Maintain Safety & Compliance Envelope (Type 1 Fclty)
4.1.1.2	Determine Deactivation Plans & Negotiate Turnover Endpoint (Type 1 Fclty)
4.1.1.3	Stabilize & Reconfigure Facilities For Minimum Surveillance (Type 1 Fclty)
4.1.1.4	Disposition Currently Identified Radioactive Materials Held As A Potential Product & Special Nuclear Material (Type 1 Fclty)
4.1.2	Deactivate Facilities With Radioactive & Hazardous Material (Type 2 Fclty)
4.1.2.1	Maintain Safety & Compliance Envelope (Type 2 Fclty)
4.1.2.2	Determine Deactivation Plan & Negotiate Turnover Endpoint (Type 2 Fclty)
4.1.2.3	Stabilize & Reconfigure Facilities For Minimum Surveillance (Type 2 Fclty)
4.1.3	Deactivate Facilities With Only Hazardous Material, Including Asbestos (Type 3 Fclty)
4.1.3.1	Maintain Safety & Compliance Envelope (Type 3 Fclty)
4.1.3.2	Determine Deactivation Plan & Negotiate Turnover Endpoint (Type 3 Fclty)
4.1.3.3	Stabilize & Reconfigure Facilities For Minimum Surveillance (Type 3 Fclty)
4.1.4	Deactivate Facilities Without Radioactive Or Hazardous Material (Type 4 Fclty)
4.1.4.1	Maintain Safety & Compliance Envelope (Type 4 Fclty)

Table 5-1. Source/Destination Function Identification. (4 sheets)

Number	Title
4.1.4.2	Determine Deactivation Plan & Negotiate Turnover Endpoint (Type 4 Fclty)
4.1.4.3	Stabilize & Reconfigure Facilities For Minimum Surveillance (Type 4 Fclty)
4.2	Remediate Tank Waste
4.2.1	Manage Tank Waste (MTW)
4.2.1.1	Store Waste
4.2.1.2	Characterize Waste
4.2.1.3	Retrieve Waste (RW)
4.2.1.4	Transfer Waste
4.2.1.5	Concentrate Waste
4.2.2	Process Waste
4.2.2.1	Pretreat Waste
4.2.2.2	Immobilize HLW/TRU Waste
4.2.2.3	Prepare Cs/Sr Capsules for Disposal
4.2.2.4	Interim Store IHLW
4.2.2.5	Interim Store and Transport ITRU Waste
4.2.3	Manage System Generated Waste & Excess Facilities
4.2.3.1	Immobilize & Dispose LLW
4.2.3.2	Disposition Gaseous Effluent (DGE)
4.2.3.3	Disposition Liquid Effluent (DLE)
4.2.3.4	Disposition Solid Waste (DSW)
4.2.3.5	Disposition Excess Facilities (DEF)
4.2.3.6	Disposition Reusable Materials (DRM)
4.3	Remedy Solid Waste
4.3.1	Maintain Solid Waste Safety And Compliance Envelope
4.3.1.1	Maintain Safe And Compliant Solid Waste Operational Environment
4.3.1.2	Maintain Safe And Compliant Solid Waste Systems, Equipment And Structures
4.3.1.3	Maintain Safe And Compliant Solid Waste Documentation (SARs, OSRs, etc.)
4.3.1.4	Maintain Qualified Solid Waste Staff
4.3.1.5	Assess Solid Waste Safety And Compliance State
4.3.2	Receive Solid Waste
4.3.2.1	Retrieve Existing Solid Waste

Table 5-1. Source/Destination Function Identification. (4 sheets)

Number	*Title*
4.3.2.2	Receive New Solid Waste
4.3.3	Characterize Solid Waste
4.3.3.1	Acquire Solid Waste Process Knowledge
4.3.3.2	Analyze Solid Waste Inventory
4.3.3.3	Archive Solid Waste Samples/Characterization Data
4.3.3.4	Assess Solid Waste Characterization Information
4.3.4	Determine Solid Waste Disposition Requirements
4.3.4.1	Compile Imposed Solid Waste Requirements
4.3.4.2	Evaluate Solid Waste Requirements For Disposition
4.3.4.3	Prepare Solid Waste Disposition Specifications
4.3.5	Disposition Solid Waste
4.3.5.1	Treat Solid Waste
4.3.5.2	Package Solid Waste
4.3.5.3	Certify Solid Waste
4.3.5.4	Store Solid Waste
4.3.5.5	Ship Solid Waste
4.3.5.6	Dispose Solid Waste
4.3.5.7	Assess Solid Waste TSD Capability Needs And Disposal Resources
4.3.5.8	Archive Solid Waste Process Samples and Records
4.4	Remedy/Restore Sites, Facilities, & Groundwater
4.4.1	Implement ER Capabilities and Support
4.4.2	Perform Remedial Action
4.4.3	Decontaminate and Decommission Surplus Facilities
4.4.4	Treat, Store, and Dispose of Waste
4.4.5	Perform Groundwater Remedial Action
4.5	Manage Aqueous Wastes
4.5.1	Maintain Aqueous Waste Safety and Compliance Envelope
4.5.2	Develop Aqueous Waste Disposition Plan
4.5.3	Receive/Transport Aqueous Waste
4.5.4	Treat Aqueous Waste
4.5.5	Disposition Aqueous Waste

Table 5-1. Source/Destination Function Identification. (4 sheets)

Number	Title
4.6	Correct Unsafe Infrastructure Conditions
4.7	Store, Treat, and Disposition SNM/NM/NF Materials
4.7.1	Maintain Safety and Security Envelope (SNM/NM/NF)
4.7.2	Control SNM, NM, and NF Functions
4.7.3	Handle Incoming Materials
4.7.4	Store Materials
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6.0 PRODUCT INDEX

This section contain Table 6-1 that is an index to the products used in this report. The first column is the product name and the second column is the page numbers where the specific product name appears.

Table 6-1. Product Index. (11 sheets)

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7.0 REFERENCES

Holmes, J. J., 1994, *Systems Engineering Functions and Requirements For the Hanford Cleanup Mission: First Issue*, WHC-EP-0722, Rev 0, Westinghouse Hanford Company, Richland, Washington.

Holes, J. J., 1994, *Architecture Synthesis Basis For the Hanford Cleanup System, First Issue*, Draft for Public Comment, WHC-EP-0779, Westinghouse Hanford Company, Richland, Washington.

Garrison, H. L. et al., 1994, *Fiscal Year 1995 Hanford Mission Plan*, Volume 1, Site Guidance, DOE/RL-93-102, Draft, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

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